

THE IRON AGE

ESTABLISHED 1855

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New Rolling Mill for Alloy Steels

Five Stands Served by Tilting Table on
One Side and Traveling Lifting Table on
Other With Runout Over Transfer Table

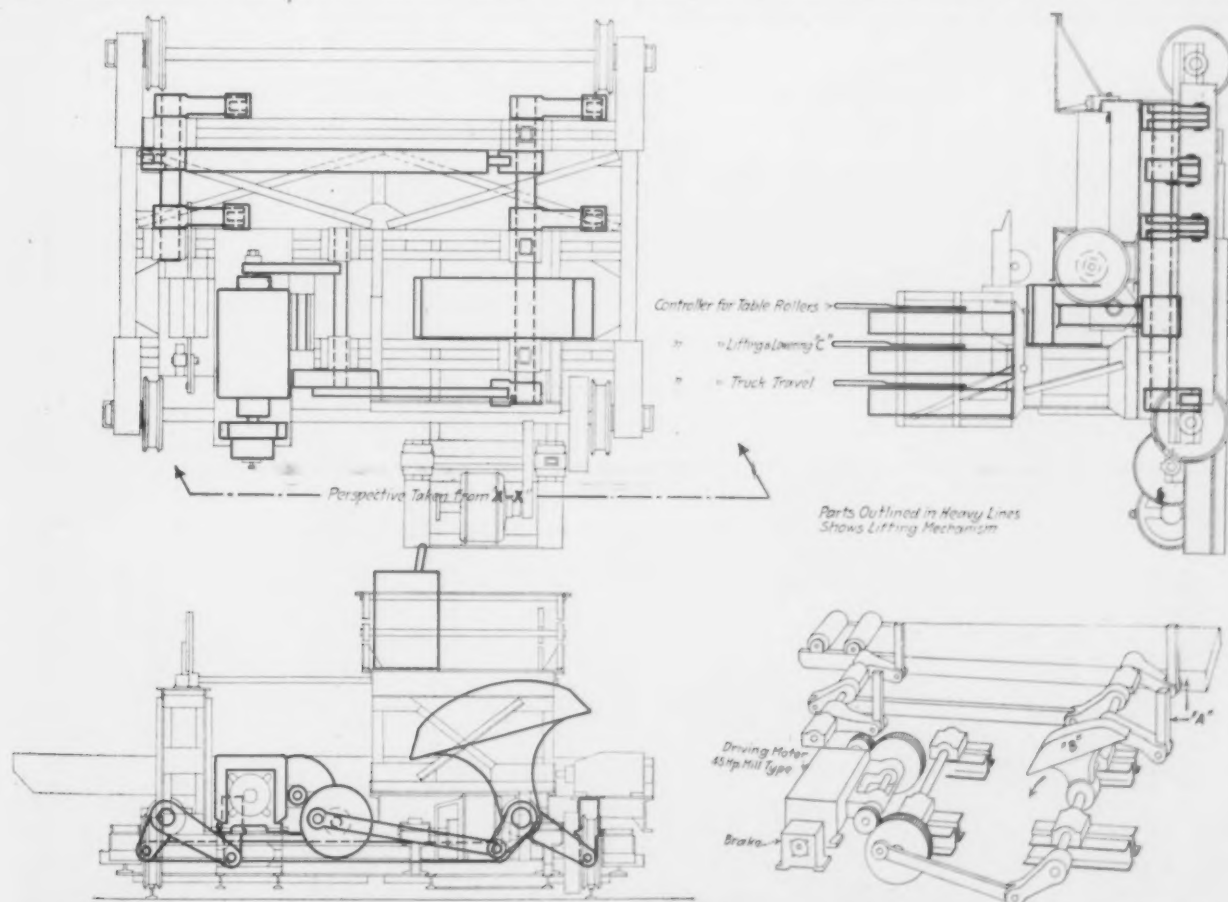
THE Pennsylvania Forge Co., Bridesburg, Philadelphia, which for about 15 years has been engaged in the manufacture of pressed and hammered forgings, including forged steel pipe flanges, has recently added to its equipment a five-stand, three-high 22-in. motor-driven bar mill for the rolling of alloy steel billets and bars.

The mill has several interesting features, among which is the complete mechanical handling of the material from the time it leaves the ingot or billet yard until it is ready for shipment as bars or piled as billets for the billet yard. All the drives are electrical from the 1000 hp. motor on the mill to the pusher on the reheating furnace. The mill was designed and built in the company's own plant with the exception of the mill drive and housings, which

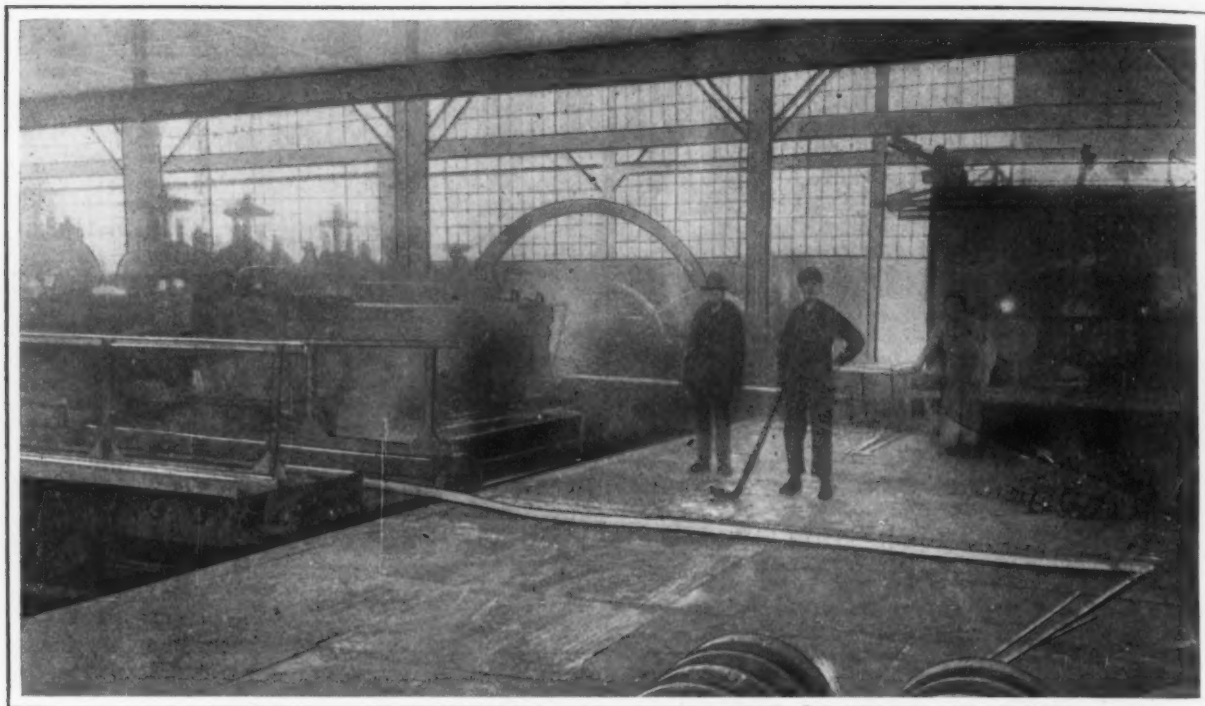
were purchased from the Anniston Steel Co., Anniston, Ala. The design and construction were under the direction of W. S. Hilton, the company's designing engineer.

The mill is housed in a well lighted building 100 ft. wide by 200 ft. long. The building is laid out in two bays of 70 and 30 ft. with a 10-ton Shepard crane in the main bay and a 5-ton crane in the 30 ft. bay. The mill is at present operating with one reheating furnace 50 ft. long by 7 ft. wide, but a second furnace is under construction.

The billets are pushed through the furnace by means of a motor driven pusher and carried through the furnace on water cooled skid pipes and discharged from the furnace upon a roller runout table which carries the billets to the mill. There are



In the Pennsylvania Forge Co.'s Bar Mill is a Tilting Table on the Furnace Side of the Mill and a Lifting Table on the Other Side. The lifting mechanism of the tilting table is shown by the heavy lines in these drawings and is illustrated by the perspective sketch. B being of course the counterweight



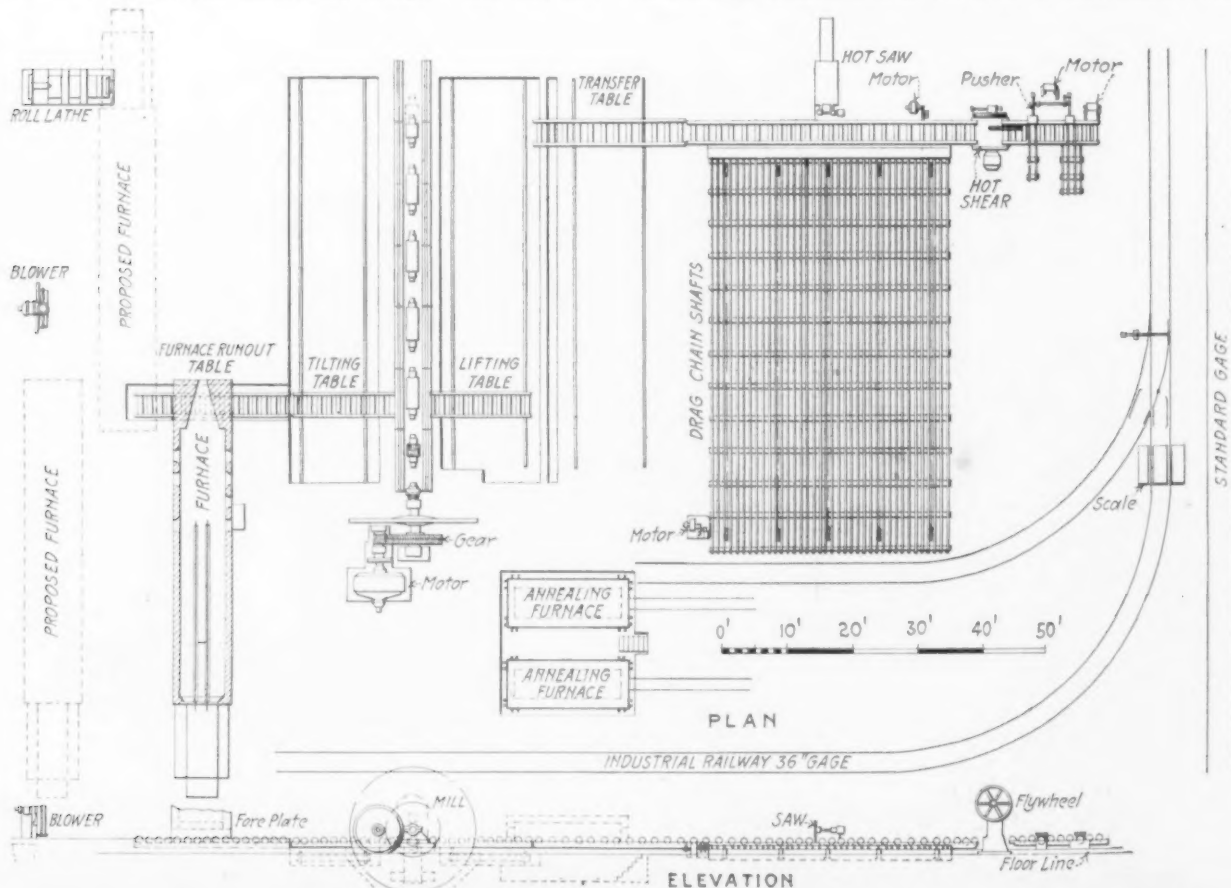
Billets from the Heating Furnace Are Carried to the Tilting Table, Which Serves the Mill

two operating tables on the mill, a tilting table, located on the furnace side, and a lifting table on the hot bed side. These tables are so arranged that the mill can handle either guide or hand rounds. With the tables the heaviest billets can be handled with only five men at the mill. A transfer table connects the lifting table with the hot bed. This is of great advantage when the mill is on roughing.

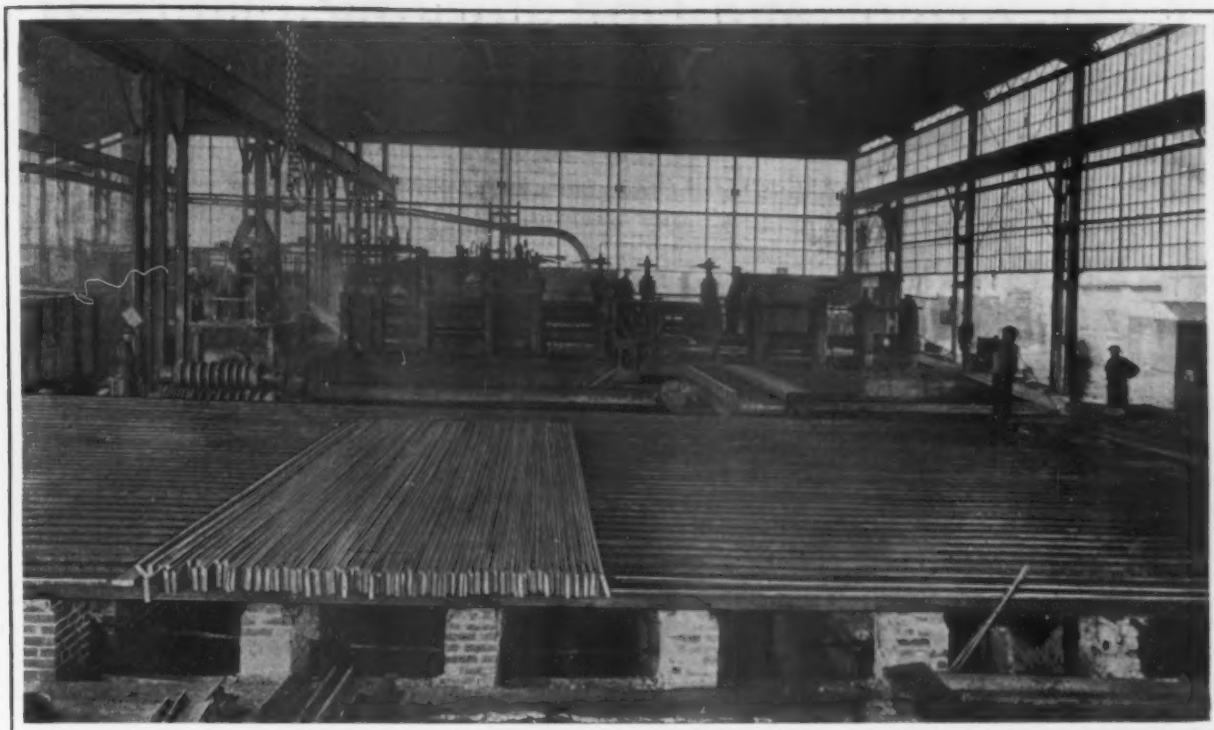
The bars are carried to the saw and shear on roller tables. Finished material is carried across the hot bed by the customary drags. The hot saw

and shear were both built by the United Engineering & Foundry Co., Pittsburgh. The saw is a two motor feed of latest design and the shear a motor driven vertical shear. By means of a specially designed piler the billets from the shear are piled and loaded on buggies for the billet yard without further handling. This reduces the number of men required at the shear, a feature particularly making for economy.

The mill has five stands of housings which are necessary to produce flats by rolling flat and edge instead of tongue and groove, as is customary with



Productive Capacity of the Pennsylvania Forge Plant Will Be Increased with the Completion of Two Additional Heating Furnaces, One of Which Is Now Under Construction



On the Hot Bed Side the Mill Is Served by a Lifting Table, Which Delivers to a Transfer Table. This commands the hot bed, hot saw and shear

the larger mills. It also makes possible fewer roll changes.

The mill is producing rounds and squares from 1½ in. to 6 in. and large sizes of flats principally in alloy steels for the automobile drop forging trade. While not wholly self contained as to steel supply the company has a 10-ton acid open hearth furnace, which furnishes ingots both for the forge shops and mill. The ingots for the rolling mill are cast in 9 in. and 11 in. square molds, while ingots of any required size are cast for forgings.

In the mill two Rockwell oil-fired furnaces, 18

ft. long by 7 ft. wide, have been installed to take care of orders requiring heat treatment.

Prominent citizens of Cincinnati have been named as a committee of the Chamber of Commerce to conduct an active campaign toward lessening industrial and other accidents. The work of the committee will be largely along educational lines, and will be carried on in three distinct divisions, public highway safety, home and school safety and industrial safety. A fund of \$15,000 will be raised to inaugurate the work and carry it along for the first year.



Hot Bed with Hot Saw and Shear

Navy Armor and Gun Forging Plant—II*

Design and Equipment of Forge and Furnace and Gun Treatment Buildings at South Charleston, W. Va.—Plant Service Features

—BY ROGER M. FREEMAN†—

THE design of the forge and furnace building at the Naval Ordnance plant is believed to be a radical departure from anything that has been built for the purpose.

The forge shops of the existing armor plants consist of buildings with one main crane aisle and a lean-to on one or both sides. The furnaces are located in the lean-tos, the presses in the middle or at one end of the main aisle. Forging cranes are provided on either side of the press on crane rails which at one end of the span are supported on the top of the press and at the other end on separate steel structures. Forging heats are brought from the furnaces down the main aisle by the overhead cranes and placed in a position where they can be picked up by the forging cranes, although in certain cases the ingot furnaces are in direct reach of the forging cranes. In order that the presses and the forging cranes may be cleared, the overhead crane in the main aisle must be placed at a relatively great height. This makes an expensive building.

The treatment shops of the existing armor plants are located in separate structures from the forge shops, and as plates must be returned to the press for bending, straightening, etc., considerable railroad traffic between the two buildings results, unless two very large presses are provided.

H-Type Forge and Furnace Building

At the Naval Ordnance Plant the forge shop and the treatment shop for both armor plate and gun forgings have been consolidated in the "H"-type forge and furnace building. The overall dimensions of the building are 477 x 644 ft. The building consists of two main aisles, each of which has a lean-to on either side and which are connected by the press room which forms the crossbar of the "H."

The 14,000-ton steam-intensified hydraulic forging press and its driving equipment, including the 2500-lb. hydraulic-pressure pumps, the 32-in. accumulator and the steam receivers and intensifiers, is located in the eastern half of the press room as divided by the shuttle tracks. The 6500-ton press which will be erected in the future will be located in the western half.

The direction of the forging is from the south aisle toward the north aisle. A 250-ton hydraulic forging crane with an auxiliary hook of 25 tons capacity is located on either side of the press on double runway rails 46 ft. above the floor. The inside runway rails are supported directly on top of the press. These forging cranes, of which all the motions excepting the hoisting motions are electrically driven, have a sufficient range of bridge travel to pick up loads from either of the shuttle tracks. Water is supplied to the hoist motions from the pressure system at 2500 lb. per sq. in.

The entire area of the press room proper, which is approximately 140 ft. wide by 160 ft. long, has been made entirely free from columns except for the row necessary to support the inside crane runway rails for the forging cranes. The central area over the presses is served by a 75-ton crane located on rails approximately 80 ft. above the floor level. This crane has been placed to serve in the erection of the presses and of the forging cranes as well as in their repair. The span of the runway girders is 140 ft. The track scale of 600,000 lb. capacity is located on the main shuttle track in the northern half of the press room.

Briefly and generally the process for armor-plate manufacture in this building will be as follows: The ingot will be received in the south aisle from the open-hearth building on a flat car by way of the shuttle track. It will be lifted by an overhead crane and placed in one of the ingot furnaces by a porter bar. To heat the ingot will require up to 20 hr. The hot ingot will then be withdrawn from the furnace and carried down the aisle to either one of the shuttle tracks and deposited on a car which will then be pushed through the few feet necessary by an electric locomotive into the press room. It will be picked up by a forging crane and carried under the press.

Armor Plate Forging Operations

The first forging operation will last about an hour. It will bring the plate down within an inch or so of its finished thickness and will include cropping the ingot. The plate, which is then 35 per cent lighter, is returned to the south aisle, deposited on the car of one of the Carbottom type reforcing furnaces, which will then be rolled into the furnace and the plate will be reheated preparatory to reforcing. After reforcing and rectifying, the plate will come out into the north aisle for the carbonizing, annealing, tempering and hardening operations, and under normal conditions will not return again to the south aisle, although returning occasionally to the press room, as required, for bending and straightening. It then goes via shuttle track to the machine shop.

The "H" type of building consolidating the forging plant with the treatment building presents the following main advantages:

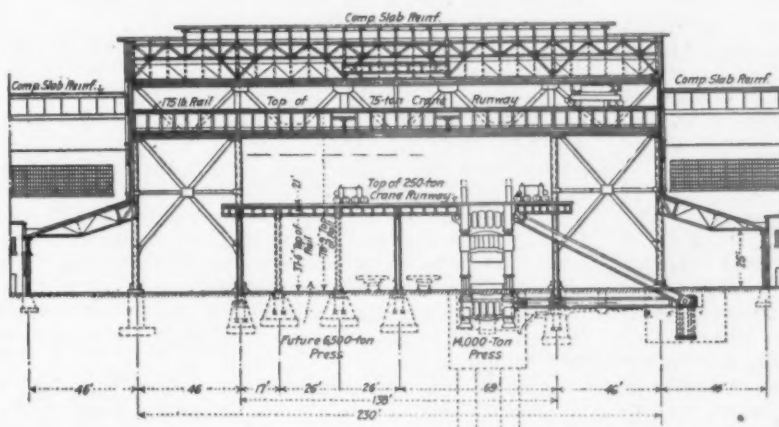
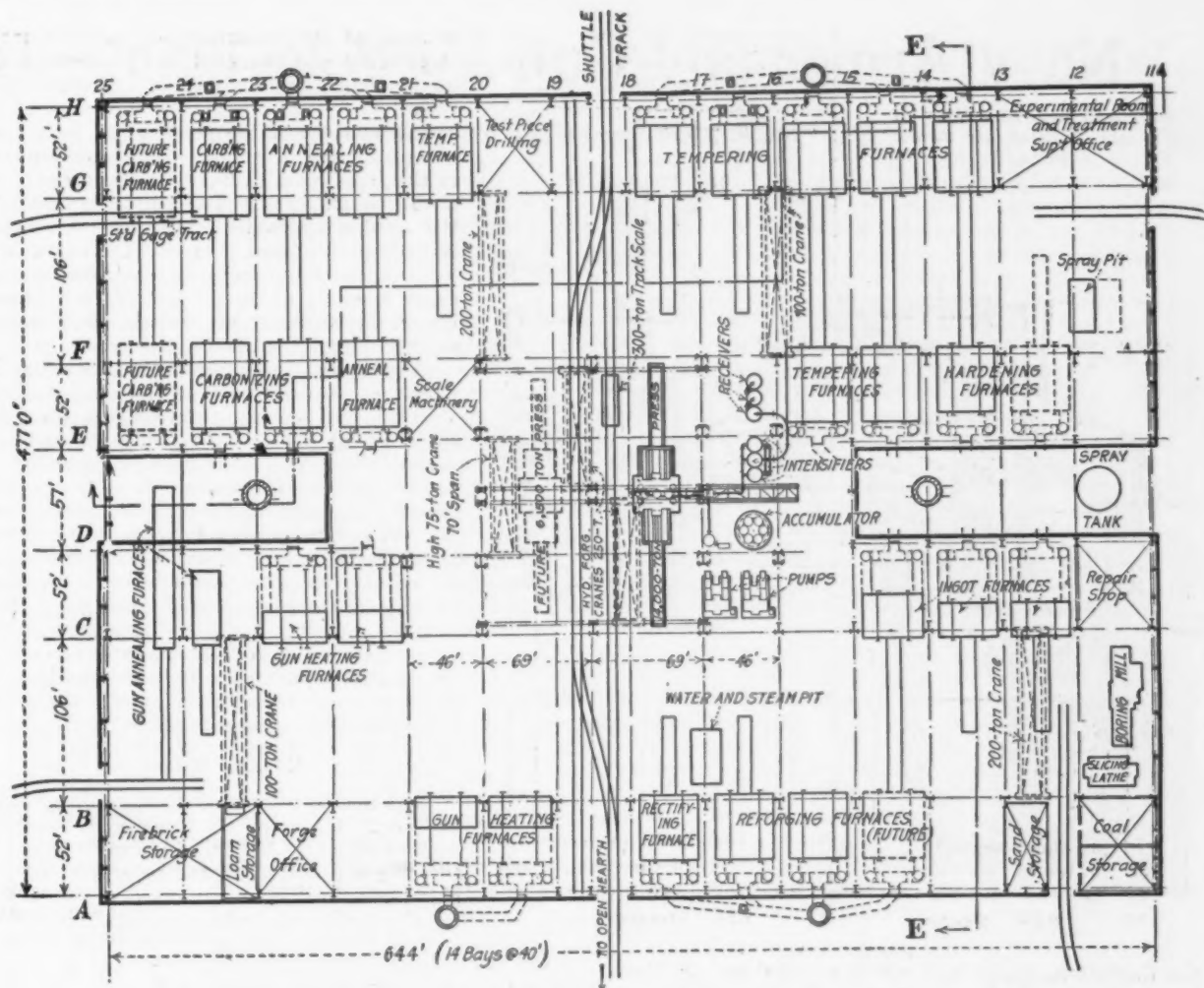
- (a) A low first cost. An estimated saving of half a million dollars was secured by keeping the height of the runway rails in the main aisles down to 40 ft.
- (b) The maximum economy of space secured by consolidating the forge and treatment operations in one building.
- (c) The maximum economy in operation should result, due to the compactness of the building itself, the relatively short haul from any furnace to the press room, and the time saved over present methods in operation.
- (d) The presses are very accessible to the furnaces and any press can receive work directly from any furnace in either aisle.
- (e) Operation of cranes in the furnace aisles will not interfere with or be interfered with by forging operations in the press room.
- (f) Operating conditions are ideal in so far as light and ventilation are concerned.
- (g) The presses and press-drive equipment are concentrated in a central area, thereby avoiding any expensive distribution systems for steam, high-pressure water or electricity.

Twenty-five furnaces are being completed in the forge and furnace building. Of these the three ingot furnaces, the two reforcing furnaces and the rectifying furnace in the south aisle; the three carbonizing, three annealing, eight tempering and one hardening furnace in the north aisle are identical in section and differ only in length. They are of the regenerative Carbottom type, the fuel is natural gas, and the air preheated. There are three different lengths of furnace, 50, 42 and 36 ft. respectively. The height inside from the floor line to the top of the underside of the arch is 14 ft. 6 in. and the width inside from face to face of the brick work is 15 ft. in each case.

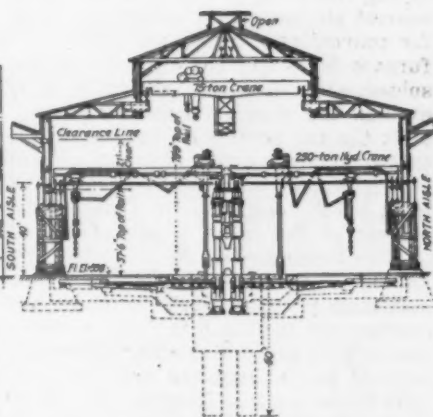
An interesting feature of the furnace equipment is the car-pulling mechanism. Having in mind the "electric mules" which draw the ships through the locks at Panama, the idea was conceived of using an independent portable electric-driven rack-rail locomotive which would operate on standard gage tracks placed between

*From a paper presented at the annual meeting, New York, last week of the American Society of Mechanical Engineers. A previous article in THE IRON AGE, issue Dec. 2, described the general layout of the plant, the transportation facilities and features of the open-hearth building.

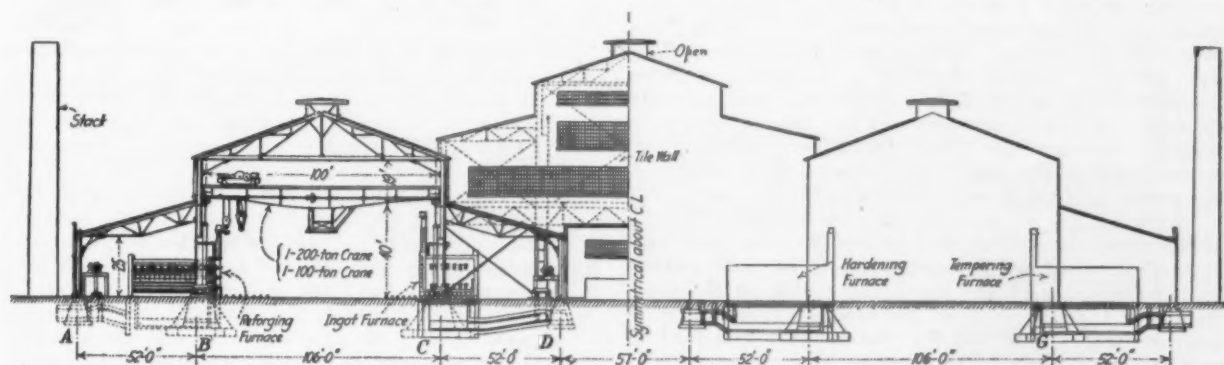
†Supervising engineer in charge during design and construction of the Naval Ordnance Plant.



Longitudinal Section Showing Press and Crane Runways



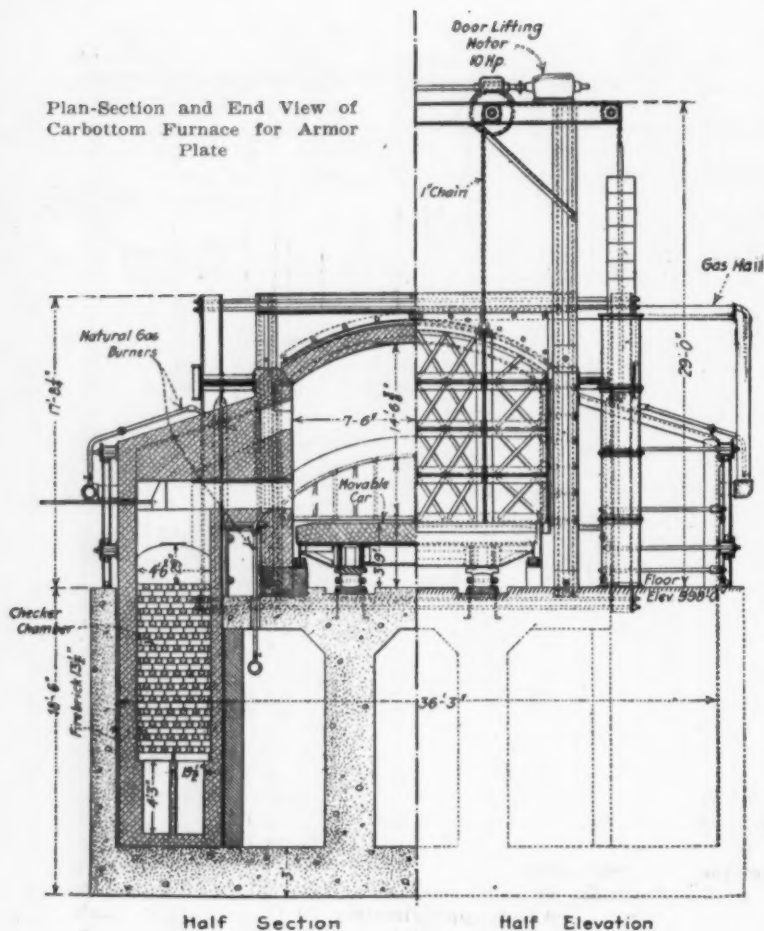
Cross Section Showing Hydraulic Cranes



Transverse Section on Line E-E

Plan and Section Views of H-Type Forge and Furnace Building. Economy of space and operation is attained by locating two departments in one building with presses in the center thus making the presses readily accessible to all furnaces with a short haul and avoiding expensive distributing systems. The forging press is of 14,000 gross tons capacity and of the steam-intensified hydraulic type; it weighs nearly 5,000,000 lb. A 250-ton hydraulic lift forging crane serves the press

Plan-Section and End View of
Carbottom Furnace for Armor
Plate



the Carbottom tracks and which would draw the Carbottom by means of a standard M. C. B. coupling. A spring reel of cable was arranged for plugging in to the nearest electric power socket and rings were provided for conveniently lifting and carrying the mule to any furnace desired by the overhead crane. The device has subsequently been altered by the operating division to exclude the standard-gage track and wheels, and as built the car-pulling mechanism will be carried on an extension of the girders of the Carbottom furnaces.

The green-annealing furnaces for gun forgings, one to be 100 ft. long, are also of the Carbottom type. The balance of the furnaces are of the solid-bottom type.

The forging press is of 14,000 gross tons capacity and is of the steam-intensified hydraulic type. The maximum working stroke is 90 in. and the four press columns are 19 ft. x 8 ft. 6 in. on centers. The columns are each 30 in. in diameter. There are three cylinders each 44 in. in diameter and the working pressure is 7000 lb. per sq. in. There are two double-acting manipulating jacks in pits on either side of the press, each of 150 tons capacity and having a maximum stroke of approximately 18 ft. Valves are arranged so that one forging cylinder alone may be used, giving greater speed for forging gun work under these conditions. Water is supplied at 2500 lb. pressure by three 250-gal. per min. pumps. A 32-in. accumulator operates on this system, which also supplies the manipulating cylinders, pull-back plungers and the 250-ton hydraulic forging cranes. The triple intensifier operating on steam at 200 lb. pressure from the boiler plant increases the pressure in the press cylinders to 7000 lb. per sq. in.

As a matter of general interest, the total weight of the press alone is nearly 5,000,000 lb. The total load at the bottom of the foundation, assuming both cranes loaded directly over the press and including the dead weight of the press and of the concrete foundations is approximately 13,000,000 lb. To support this load it was necessary to place the press on four concrete piers, each 9 ft. in diameter, which bear on rock about 60 ft. below the level of the pressroom floor.

Under conditions of eccentric loading there is an extremely remote possibility that a very great side thrust may occur at the top of the press. At the in-

sistence of the manufacturer, a structural steel brace was designed to take this load, as is shown in the section of the press room.

All motions of the presses and jack are controlled from a pulpit located on the floor of the press room on line with the press and about 15 ft. away. The hoist motions of the 250-ton hydraulic cranes are also controlled at this point. The bridge and trolley motions of the crane are controlled from cages mounted at the far end of each forging crane whence the operator can most readily line up the piece in the press.

The spray for quenching armor plate is placed at the east end of the north aisle. This consists of a reinforced-concrete pit 16 x 32 ft. x 8 ft. deep. The bottom is covered by a grillage of small pipes perforated with 1/4-in. holes. A carriage on tracks carrying a like grillage straddles the pit. The plate is taken from the Carbottom hardening furnace nearby by a crane and placed on suitable supports in the pit. The carriage is then moved over it and the plate drenched on either or both sides with water. Approximately 25,000 gal. of water per min. are required during the first 20 minutes of the operations. The water from the spray is wasted into the adjacent gully.

Machine Shop

The machine shop is 320 ft. wide by 552 ft. long. It comprises three main aisles, each of which is 100 ft. wide center to center of crane rails. Crane rails are 40 ft. above the floor level.

The south aisle and the middle aisle are to be used for the finishing of the armor plate.

Each is served with a 150-ton and a 75-ton crane with 25-ton and 10-ton auxiliary hoists respectively. The principal machine tools in the south aisle are four planers, two universal borers and drillers of the car type, two universal boring, drilling and milling machines, a universal radial drill and two armor-plate grinders. At the west end of the south aisle will be located the burning equipment; gas will be piped from a separate oxy-hydrogen plant which has been built 100 ft. south as a matter of safety. At the west end of the south aisle is the erection floor and the surface plates for the fitting up of armor plate prior to shipment. The erection floor will be 168 ft. long by 93 ft. wide and will consist of a thick reinforced-concrete slab with rails embedded in the surface. The surface plates cover an area 85 x 48 ft. and are of steel. Special arrangements are made in the foundations so that an absolutely level surface may be accurately maintained.

The middle aisle contains an open-side planer, a vertical and horizontal planer, two armor-plate rotary planers and saws, a cutting-off machine and a double armor-plate breast planer. Offices and a tool room will be located in the farthest bay west.

The north aisle, which is served by two 75-ton cranes, will be devoted to the machining of gun forgings. Equipment of ample size to rough-bore and turn 20-in. 50-caliber gun forgings is provided.

The shuttle track ends in the middle aisle of the machine shop. Gun forgings from the forge shop will arrive by way of the main track system in order not to make necessary swinging the great length of the forgings through 90 deg., although this can be very conveniently done if required, due to the 100-ft. width of the aisle. Railroad tracks enter both ends of the north and middle aisles and the east end of the south side. A track scale of 100 tons capacity is placed on the latter track.

Somewhat over 60 per cent of the side and end wall area is in steel sash. Top lighting is provided by longitudinal sawtooth monitors in the side aisles and a double sawtooth monitor in the middle aisle.

Gun-Treatment Building

The gun-treatment building is alongside the machine

shop, the intervening space 40 ft. wide being roofed over to provide for lockers, toilets, offices and a 2-story electric substation for the gun-treatment furnaces. The building consists of a low portion and a high portion. A railroad connection from the main track system runs through the entire length of the building close to the south wall.

The low portion of the building provides space for a future straightening press, storage area for forgings, while awaiting treatment or result of tests, cutting-off saws and slotting and boring machines for the taking of test specimens.

The high portion provides for the vertical treatment of gun forgings. A reinforced-concrete pit approximately 80 ft. square and 55 ft. deep has been built and will contain the 10 x 105 ft. vertical electric heat-treatment furnace and a quenching tank 10 ft. in diameter and 105 ft. high. A 50-ft. furnace is also to be erected on a line with the high furnace and the quenching tank. Space is provided in the pit and on the floor for a duplication of this equipment. Structural steel platforms will be erected around the furnaces in galleries 10 ft. apart, for the convenient inspection of the forging in the furnace during operation through peep holes in the side of the furnace. The steel structure will also support the rolling doors which cover the top of the furnaces and the bridges from which the forgings are hung while in the furnaces. An interesting detail is the installation of an elevator to carry the operator from the bottom of the pit to any one of the 10 galleries in the 105 ft. height of the treatment-furnace structure.

The reinforced-concrete pit is of unusually heavy construction in order to withstand the pressure due to its depth, and due to the additional 20-ft. head of water to which the bottom is subjected. The design is unique in that no interior cross-bracing whatever is used. Each of the four sides of the lower half of the pit is designed as a slab supported between the bottom of the pit and a flat horizontal beam at approximately one-half the total depth. The upper half of the walls are designed as retaining walls, for which the flat beam forms the base. Special precautions were taken in the construction of the pit to secure watertightness and the entire concrete work was divided into units each consisting of one full day's pouring of concrete, metal water stops being provided at each construction joint and also where the needle beams of the shoring pass through the wall.

The high portion is served by a 75-ton crane with a 104-ft. span which has a 50-ft.-per-min. hoisting speed at full load, and a 100-ft.-per-min. lowering speed. All motions of this crane are controlled from a pulpit located on line with the quenching tank and at a height

just above the top of the furnaces and tanks, on the east wall of the high portion of the building. The furnaces are placed on line with the tank so that only a hoist and a trolley motion will be required in the quenching operation.

The low portion is served with two cranes which are duplicates of the machine-shop 75-ton cranes. The runway of the low portion has been extended into the high portion so that pieces may be picked up and carried directly under the area served by the high crane and thus avoid an additional transfer by rail.

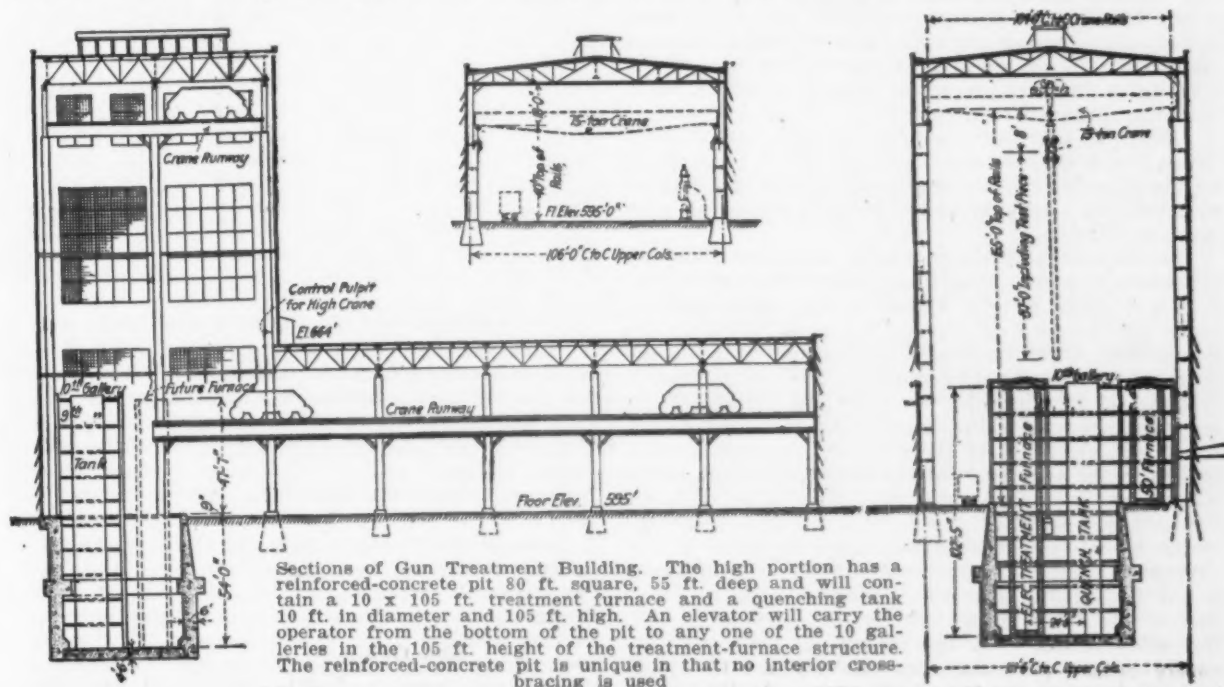
Plant Services

The service features of the plant include the industrial water supply, the sewerage, electrical power and lighting, steam, air, natural gas, etc. The electric, water and compressed air systems are centered in the service building, which consists of two component parts, an outdoor substation and the service building proper. Electric power will enter the building at 6600 volts, 3-phase 60-cycles and be distributed from the main buses to all parts of the plant. The building houses four 1500-kw. rotary converters, synchronous condensers, three air compressors, etc.

The outdoor electric substation is for the control of the two 44,000-volt and one 66,000-volt 3-phase 60-cycle incoming circuits, and consists of three banks of transformers and the necessary switches, buses, etc.

The industrial water supply is taken from the Great Kanawha River which flows west on the north boundary of the reservation. The river pump station is constructed of reinforced concrete directly in the river bank. Two 2000-gal.-per-min. pumps are being installed and space is provided for a third pump. The pump floor is underneath the river level and a positive head thereby assured. Occasional floods bring the river up to 30 ft., or in extreme conditions, 35 ft. The pumps raise the water approximately 50 ft. to a surge tank, whence it flows in a 30-in. tile pipe by gravity to the lower end of the reservoir settling basin. This basin has a capacity of 25,000,000 gal. As the maximum demand of the plant for industrial water is estimated to be approximately 5,000,000 gal. per 24 hr., the reservoir provides at least a five-day settling period for the raw river water.

The water is carried from the reservoir to the service building in a reinforced-concrete flume, where the distributing pumps are located in a pump pit which insures a positive head for the pumps. Distribution is at 60 lb. pressure. As an additional precaution in the remote case that the spray pumps should fail to operate immediately, when the plate was placed in the spray pit for quenching, a standpipe 25 ft. by 100 ft. is being provided in the east court of the forge shop.



A separate city water system has been provided to supply water for drinking and lavatory purposes. This water will also be used for 2500-lb. pressure water at the hydraulic press and forging cranes.

Sewage, waste water and, in certain cases, roof water, are gathered from branch systems into the trunk line which, along with the other distribution systems of the plant, including gas, water and electrical conduit, follows the general line of the main west road and the main railroad track across the upper dam and ultimately reaches an outfall several hundred feet below the river pump station. The trunk line is 24 in. in diameter.

Compressed air is piped at 100 lb. pressure from the service building to the main buildings in a loop system, large quantities being used in the open-hearth, forge shop and machine shop, and also in the blacksmith shop, where air will be used to operate the hammers. A complete loop system is provided.

Natural gas is obtained from the fields some miles away and will be delivered at the plant at 50 lb. pressure. A loop system is provided with reducer valves

located at convenient points throughout the plant. The natural gas supply may be exhausted, it is believed, within the course of the next 10 years, and with this in view necessary provisions have been made for double checker chambers for the open-hearth furnaces in case producer gas must be resorted to. The use of pulverized coal as a fuel was also in mind when the foundations for the furnaces were designed. Space which was left for double checker chambers can be equally well used for ash baffles.

Actual work for the construction of the plant began in the latter part of September, 1918, when ground was broken for temporary storage sheds. The construction work remaining to be completed consists chiefly of the distribution systems for the plant services, the concreting of the roads and the installation of lockers, toilets and offices. Bottoms should be burned in the open-hearth furnaces and the first armor ingots cast by the time this paper is presented. The majority of forge furnaces are now completed and the 14,000-ton press should be erected and in operation by the first of the year.

PITTSBURGH BASING CASE

Arguments Ended Before Federal Trade Commission—Farmers' Petition

WASHINGTON, Dec. 14.—The request of the American Farm Bureau Federation for leave to intervene in the Pittsburgh basing case before the Federal Trade Commission promises a delay in its determination. The commission has given Clifford Thorne, the attorney of the organization, 10 days in which to file a brief with directions to serve it on all the attorneys of record in the proceedings. The latter are then to have 10 days in which to file a reply.

The following telegram from J. R. Howard, president of the American Farm Bureau Federation, was put in the records of the commission:

"Indianapolis, Ind., Dec. 2, 1920. The American Farm Bureau Federation in national convention with 1000 delegates from all parts of the United States, representing this organization of more than 1,000,000 farmers today unanimously passed the following resolution:

"Whereas the maintenance of the Pittsburgh plus schedule of prices by the United States Steel Corporation and other companies on rolled steel products is based on a fictitious freight cost or other arbitrary, regardless of the source of the raw product and regardless of bona fide differences in cost specifically stated in the Clayton law thereby producing unjust discriminations that hamper and retard the industrial development of the West and South along natural lines which constitutes our only protection against excessive prices on farm implements and machinery, therefore be it

"Resolved that we earnestly petition the Federal Trade Commission to grant the applicants' request for an investigation of said practices and that we may be permitted to intervene in such investigation as provided by law."

The arguments in the case were ended last Thursday by attorneys representing opponents of the basing system who made a final appeal to the commission to order the issuance of a complaint upon which an investigation might be made preliminary to a decree prohibiting the continuation of the Pittsburgh basing system. H. G. Pickering, chief counsel for the Western Association of Rolled Steel Consumers, and Elliott Cheatham, attorney for the Southern fabricators, also replied to the arguments of the defenders of the Pittsburgh base who had completed their arguments on Wednesday. Much of the latter's argument was directed at the proposition that the provisions of the Clayton act against price discrimination should apply to the United States Steel Corporation, whether there was or was not collusion between the Corporation and the independents. On this phase of the case, Mr. Cheatham alleged it was immaterial whether the applicants had or had not shown collusion among the steel

producers. No decision is looked for before next year, and it would surprise no one if the decision of the commission were deferred to February.

Steel Output Falls Off in November

The production of steel ingots in the United States in November was 12.5 per cent less than in October, according to the statistics gathered by the American Iron and Steel Institute. Thirty companies which made 85.12 per cent of the steel ingot production in 1919 produced 2,638,670 gross tons in November, against 3,015,982 tons in October. Estimating the production of the remaining companies on the same basis, the total production of ingots in November was 3,099,941 tons, or 119,208 tons per operating day, counting 26 working days, against an estimated October total of 3,543,212 tons, or 136,277 tons per operating day.

In the table below the outputs of Bessemer and open-hearth works are separated. It will be noticed that Bessemer steel held up substantially to the October figures. There are no comparative figures for the month of November, 1919, as, on account of the steel strike, no monthly statistics were published last year after August:

Monthly Production of Steel Ingots by 30 Companies Which Produced About 85 Per Cent of Total in 1919—Gross Tons

	Open Hearth	Bessemer	All Other	Total
January, 1919....	2,351,153	749,346	7,279	3,107,778
February	2,043,635	655,206	5,842	2,704,683
March	2,109,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,617	1,929,024
June	1,692,257	521,634	5,328	2,219,219
July	1,875,630	625,246	7,300	2,508,176
August	1,988,651	748,212	9,218	2,746,081
January, 1920....	2,242,758	714,657	10,687	2,968,102
February	2,152,106	700,151	12,867	2,865,124
March	2,487,245	795,164	16,640	3,299,049
April	2,056,336	668,952	13,017	2,638,305
May	2,251,544	615,932	15,688	2,883,164
June	2,287,273	675,954	17,463	2,980,690
July	2,135,633	653,888	13,297	2,802,818
August	2,299,645	695,003	5,784	3,000,432
September	2,300,417	693,586	5,548	2,999,551
October	2,335,863	676,634	3,485	3,015,982
November	1,961,861	673,215	3,594	2,638,670

Pulverized Coal in Blast Furnaces

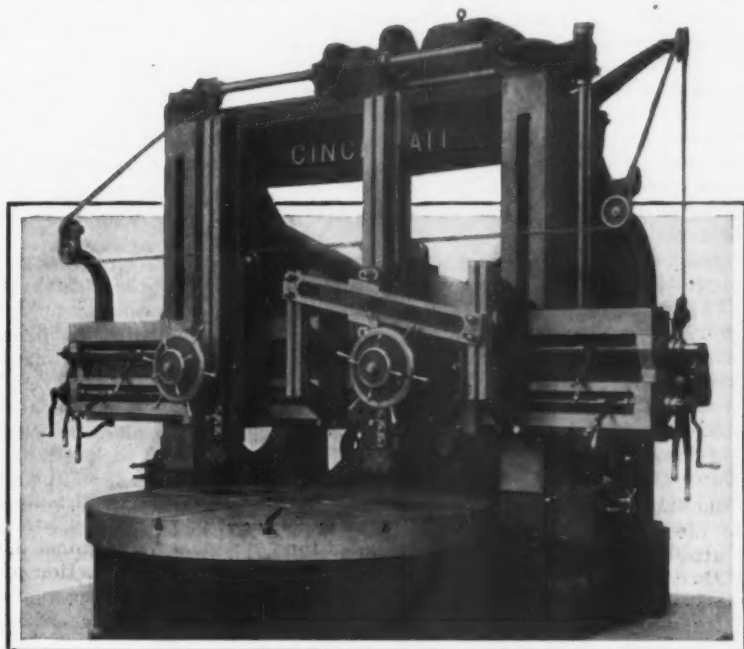
Arrangements have been made by the Union Minière du Haut-Katanga with the Garred-Cavers Corporation, for the use of its process whereby pulverized coal is used to replace coke in blast furnaces. The Union Minière du Haut-Katanga has placed orders for a 42 in. Fuller mill and a Fuller-Kenyon pump for the coal preparation plant which will be used in connection with the process at the copper smelter in the Belgium-Congo.

Licenses were secured from the Garred-Cavers Corporation some time ago by the Cerro de Pasco Copper Corporation, Peru; the International Nickel Co. and the Tennessee Copper Co., for the use of this process at various smelters. W. L. Wotherspoon, 43 Exchange Place, New York, is general manager of the Garred-Cavers Corporation.

Taper Attachment for Cincinnati Boring Mills

For turning and boring tapers approaching nearly a horizontal line to which swiveling the head is not adaptable, the taper turning and boring attachment shown in the accompanying illustration on an 8-ft. mill has been designed by the Cincinnati Planer Co., Cincinnati, for use on all sizes of its boring mills from 42 in. up to 12 ft. The component parts such as sine bar supports, sine bar, and sine bar guide are all shown in the illustration.

To provide up and down adjustment to the ram with-



Attachment for Turning and Boring Tapers Approaching Nearly a Horizontal Line, Mounted on Cincinnati 8-Ft. Mill

out loosening the sine bar and thereby changing its position the faces of the rams are specially machined and fitted with a T-slot equal in length to the up and down travel.

When mounting, the sine bar supports, sine bar guide, and sine bar are placed in position loosely and clamped securely in place after the proper angle has been determined. The power feed to the ram is then disengaged by the small handwheel making it ready for operation. The attachment is intended for angles up to and including 18 deg.

Liquid Fuel Regulating Valve

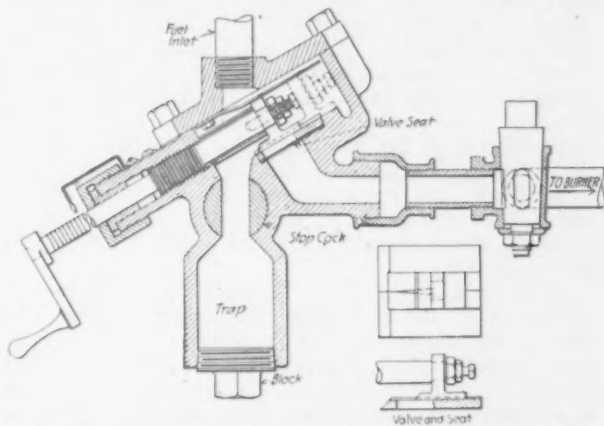
With the ever increasing use of liquid fuels, the demand has been constant for some device that would make possible complete combustion at all times and under all conditions. The goal of those who have given this matter attention has been the proper mixture of air or steam with liquid fuel in the burner. The control of the air or steam apparently is simple, but the problem has been, and still is, to control the liquid fuel supply to the burner, for the flow of the fuel must be regular and uniform in its viscosity. There are many types of liquid fuel which are found in an almost indefinite number of grades, but absolute uniformity is lacking. This condition necessitates the use of some sort of regulating valve which will compensate for the wide differences in the various fuels and deliver to the burner a constant flow of fuel of varying viscosity and only in sufficient quantity to secure complete combustion.

A. V. Rigby, assistant general superintendent of the Farrell, Pa., works of the Carnegie Steel Co., has perfected a valve known as the Rigby liquid fuel regulating valve, which is the result of research and experimentation in an effort to efficiently burn the tar produced at the by-product coke plants of the Carnegie Steel Co. A company is in process of organization which will

manufacture this valve, for which Bailey-Lewis, Inc., Bakewell Building, Pittsburgh, is the sales representative.

The vital feature of the valve is a triangular aperture in the valve seat, beveled back from the face, and a sliding shearing valve running in a groove cut in the face of the seat. As shown by the accompanying line drawing, the oil enters at the fuel inlet and passes down through the stop cock into the trap, where any sediment or heavy particles of fuel settle. The fuel then passes through the triangular opening in the valve seat to the burner. The valve slides across this triangular opening which is 1 in. long by $\frac{1}{4}$ in. at its greatest width, this movement regulating the flow of the fuel by the opening and closing of the aperture. The area of this $\frac{1}{4}$ -in. orifice is 0.1023 sq. in., which is the approximate equivalent of a $\frac{1}{2}$ -in. needle valve open 1/100 in. The passing of liquid fuel, although impossible through a needle valve, is possible in a Rigby valve due to the shape of the opening in the valve seat.

Another advantage claimed for this valve is that it has its smallest aperture at the seat, where the fuel enters the triangular opening and is beveled off so that when the fuel passes through the aperture it must pass into the outlet for burning, whereas the needle valve has width to its seat which allows sediment and particles passing through the valve to impinge on the seat and close the valve. If sediment should lodge in the opening of the seat of the Rigby valve, it could be cleaned off by turning the handle of the valve which closes it. The stem of the valve is threaded so that one complete turn of the handle moves the valve $\frac{1}{16}$ in. This operation immediately shears off the particles of sediment and pushes that part above the seat into the trap, the balance of the particle immediately passing through the triangular opening when the valve again is opened. This operation can be accomplished in a few seconds. The drop can be cleaned in a few minutes without stopping the



Rigby Liquid Fuel Regulating Valve. A triangular aperture in the valve seat is a feature

flow of the fuel through the valve by turning the stop cock and removing the block. A lock nut arrangement makes it possible to set the valve for any quantity of fuel that is required.

The Koppers Co., Pittsburgh, has distributed novel and instructive calendars, 13 $\frac{3}{4}$ x 28 $\frac{1}{2}$ in., on each sheet of which is a photograph of some Koppers by-product coke plant installation. On the last sheet are tables of useful data, such as on analyses and tests of coal and coke, typical analyses of gas from Koppers by-product coke ovens, characteristics of a typical by-product coke oven tar, and coke oven pitch, and properties of blue water gas and coke producer gas. The photographs are clear and the width of the calendar.

Closed Shop Principles Paramount*

Attitude and Policy of Labor Unions During the War Described — False Philosophy Carried to Extremes by Gompers and Others

BY JAMES A. EMERY†

IT is a truth "as new as laughter and as old as tears" that successful human relation, whether with individuals or groups, however large or small, requires continuous personal contact. Whether the numbers under common management are few or many, they demand that management, through the person of the director or his deputies, shall, in the daily circumstance, maintain between employer and employee a bond of personal interest and sympathy. That sense of reciprocal human interest you know and recognize to be essential. How to maintain it is a major consideration in every plant. Not only you, but the press and periodical literature, are alike deluged with the suggestions of the expert and the inexperienced. Mark Twain remarked that anybody could run a newspaper. To-day the solution of labor problems attracts the same body of enthusiasts, many of whom regard their zeal as the only indispensable equipment. But it is to be seriously recognized that this "great universal problem," as Carlyle termed it, is not merely holding the attention of the parties to the employment relationship. The reactions of the conflict of industrial thought and action, have made it a foremost subject for premiers and parliaments. To a greater extent than ever, it has held the attention of our own Congress and, within a year, two National conferences, assembled by the President of the United States, have undertaken remedial suggestion.

Common Code of Principles

The last of these, deserving high respect because of its personal constituency, devoted the greater part of its recommendations to the establishment of nationwide mechanism for the adjustment and arbitration of industrial disputes, and distinguished authority has enunciated the plausible declaration that there is too much talk about principle and too little effort to bring employer and employee together about the same table. There is doubtless much truth in the underlying suggestion, but I venture to remark, from the experience of civilization with the administration of ordered justice, that merely bringing litigants together establishes no code of law. All mediation, not less than final adjudication, presupposes the existence of a common code of principle which measures the rights and duties of the parties litigant.

It is with this thought in mind that I venture to outline to-day the nature and continuing existence of a case of industrial controversy which cannot be overcome by conciliation or mediation, for it represents an inevitable conflict of fundamental principle. No court of arbitration can determine it; no industrial board can adjudicate it, for neither boards nor courts establish the principles of government. They but apply and administer them to the facts before them. A court without a law could find the standards of its justice only in the personal opinions of its judges, and these would vary not only in the individual but in his successors. Such a court, no matter what the nature of its controversy, would personify a government of men and not of law, and this is not less true of industrial controversies than of the administration of civil or criminal law.

"Lock Step of Convicts"

Nor is it true that it is sufficient for employer and employee to agree between themselves, individually or

collectively, regardless of the principle of agreement. The unhappy situation unfolding itself to the public gaze in the city of New York rests upon an agreement between building trades employers and building trades unions, established and perpetuated with their feet under the same table and their joint hands in the same public pocket. It is the industrial peace of mutual concessions and agreement for joint extortion. Let us hope that when the facts are all known the conspiring employers and employees may keep the lock step of fellow convicts.

No court of industrial relations, however constituted or wherever operated, can accomplish its task or receive the support of public opinion or authority unless the principles of adjudication correspond with the principles of the republic. This leads me to the primary proposition I hope to impress upon your attention, and that is that the closed union shop is the fundamental tenet and vital principle of the present philosophy of organized labor, and so long as it remains such it tends to produce a condition of mind in the leadership and membership of the movement that assures a continuing conflict with the most vital principles of private right and political liberty inherent in this form of government.

Which Will Surrender?

If this be so, then I submit that either the principle of government must surrender to the philosophy or the philosophy to the principle of government. The two are in inevitable conflict and one or the other must dominate.

To demonstrate the truth of this proposition, I purpose to present to you the open shop principle in its industrial and political aspect and then, from no sources of my own but from the recognized declarations of the Federation of Labor, I desire to offer you the evidence of the progress and growth of an attachment to the principle of the closed union shop and the apparent determination of its adherents to make it their dominant purpose subordinating to its security and expansion every other political and economic consideration. When I allude to the "open shop" I am not employing the phrase in what I may term its popular sense. The man on the street ordinarily understands by it a shop in which it is not necessary to belong to a union in order to secure employment. That widespread understanding of the phrase is significant of the condition which gave it its primary popular meaning. But when I refer to it as a principle of employment rather than a mere policy, I use the phrase as a declaration against arbitrary discrimination authoritatively defined by the Anthracite Coal Strike Commission of 1902, and which received at that time the acquiescence, if not the approval, not only of the parties to the controversy but the chief leaders of organized labor:

That no person shall be refused employment, or in any way discriminated against, on account of membership or non-membership in any labor organization; and that there shall be no discrimination against, or interference with, any employee who is not a member of any labor organization, by members of such organization.

The term "organization" as there used means a legitimate organization. It obviously cannot mean one which teaches, stimulates or approves the violation of law as the means of attaining its ends or which advocates or practices resistance to the authority of government. For, as the commission said elsewhere in its report:

A labor or other organization, whose purpose can only

*Address delivered at convention of National Founders' Association, New York, Nov. 17, 1920.

†Counsel National Founders' Association.

be accomplished by the violation of law and order of society, has no right to exist.

President Roosevelt's Famous Reply

The report of the Anthracite Coal Strike Commission was made to the President of the United States, approved by him and accepted by miners and operators, March 18, 1903. In the fall of that year, a circumstance arose which led to the first definite declaration of the faith and purpose of the Federation of Labor which brought it into conflict with the open shop principle of the commission. In September, 1903, one Miller was dismissed from the Government Printing Office upon the controlling ground that he was no longer a member of his union in good standing. Upon his appeal to the Civil Service Commission, he was restored to his position. Thereupon the executive committee of the American Federation of Labor called upon President Roosevelt to insist that the Government discriminate in employment in the public service against Miller because he was a non-union man. To this committee, Mr. Roosevelt made his now famous reply, on Sept. 29, 1903:

In the employment and dismissal of men in the Government service, I can no more recognize the fact that a man does or does not belong to a union as being for or against him than I can recognize the fact that he is a Protestant or a Catholic, a Jew or a Gentile, as being for or against him.

Beginning of a Campaign

Following the declaration of the President of the United States, the executive council of the Federation issued a proclamation which marks the beginning of the nationwide campaign to compel membership in a union as a prerequisite of employment. The executive committee declared:

The immortal Lincoln said: "This country cannot long remain half free and half slave." So say we, that any establishment cannot long remain or be successfully operated part union or part non-union. . . . The best interests of the labor movement call for the employment of union workers and discourage in every way, shape or form the deteriorating effects which follow the recognition of the open shop.

From the time of that announcement, the official literature of the trade union movement and its notable leaders, in speech and writing, undertake to vindicate the inevitable economic or physical, and, indeed, legal compulsion through which the monopoly of opportunity for employment could be alone maintained. Out of many, one typical and representative utterance may be used to express the general philosophy. The late John Mitchell, then president of the United Mine Workers and vice-president of and a member of the executive council of the American Federation of Labor, declared in the *American Federationist* for December, 1903:

The unionist has a perfect legal and moral right to refuse to work with a non-unionist, and as time goes on, the exclusion of the latter will become more and more complete. With the rapid extension of trade unions the tendency is toward the growth of compulsory membership in them and the time will doubtless come when this inclusion will become as general and will become as little of a grievance as the compulsory attendance at school. The inalienable right of a man to work will then be on a par with the inalienable right of a child to play truant and the compulsion exercised by the trade union will be likened to that of a State which in the interest of society forces an education upon the child even though the child and its parents are utterly and irreconcilably opposed to it.

You will observe that Mr. Mitchell's case for compulsory membership in trade unions rests upon the perfection of his analogy between the right of the State to compel the education of the future citizen to protect the quality of government and the right of a private organization to compel membership in it as a prerequisite to that right to earn a living. This arrogation of authority like to that of the State continued in process. The conception of trade union right parallel with public power which Mr. Mitchell expressed in its incipency is announced upon Mr. Gompers' editorial page, in 1909, in its fruition, when it was declared:

With the patriot we say: "May my country always be right, but whether right or wrong, my country." To this

let each worker add this: "May my union always be right, but whether right or wrong, my union."

In thorough consistence with this thought, the book of laws of the International Typographical Union prints the obligation of the member, in which he promises:

That my fidelity to the union and my duty to the members thereof shall in no sense be interfered with by any allegiance that I may now or hereafter owe to any other organization, social, political, or religious, secret or otherwise.

Efforts to Exclude Non-union Workers

During the period which intervenes between the original pronouncement of 1903 and the ultimate declaration of the primary duty of the unionist to support his union like his country, whether right or wrong, the industrial history of the Nation provides thousands of examples not merely of the widespread acceptance of the doctrines enunciated but equally determined efforts to put them into practice. The records of the courts are replete with evidence of the concrete assertion of this creed. They are corroborated by the arguments and testimony adduced before the legislative committees of State and National assemblies. This vast body of evidence overwhelmingly demonstrates the nature of the weapons employed to enforce the establishment and perpetuation of the closed union shop. It presents a great panorama of systematic effort to exclude or expel the non-union worker, by both physical and economic force, the latter operating through widespread local or national boycotts, which found their final rebuke in the Federal jurisdiction in the twice repeated verdict of the jury, and the confirming opinion of the Supreme Court of the United States, in the famous Danbury hatters' case.

Divided Allegiance

But the worst consequence of this philosophy is not the physical or economic injury wrought upon the victims of combination, serious as that is. It is the development, of necessity, of an attitude of divided allegiance toward government itself. The courts as well as the judges who, in the discharge of their duty, intervene between the proponents of this philosophy and their victims become, in their turn, the subject of severe and then savage criticism and assault, and a legislative campaign develops, having as its immediate object the prohibition of the injunctive remedy in trade disputes. As the right and duty of interference through the injunctive process is found inherent in the equity jurisdiction, it is proposed to either strip the chancellor of his power or exempt the labor organization from its application, and, in logical sequence, the thought of justifiable exclusion breeds the further belief that the combination of organized labor is of such superior value that it should be exempted, while striving to attain its purposes, from civil or criminal liability incurred in their pursuit. At times the assault upon the judiciary assumes the form of an effort to shorten the term of the judge and make him, by frequent election, responsive in his decisions to the popular clamor which, as part of the propaganda, is aroused against him. Were the campaign successful, judicial officers would cease to dispense justice, irrespective of the character or position of the litigant, and become a political bench meeting the demands of a constituency.

So deep-rooted becomes the fanatical attachment to the belief in the right to exclude others from employment who do not share in the faith or submit to the control of the monopoly that its followers will accept neither an adverse legislative nor judicial verdict. We find not merely individual and isolated disobedience of judicial process followed by legal proceedings to test the court's authority which might be anticipated, or the pursuit of remedial legislation, but a declaration by the Federation of Labor, solemnly adopted and reaffirmed over a period of three years, formally overruling the objectionable authority of the courts and vowing:

That any injunction dealing with the relationship of employer and employee, and based upon the dictum "labor is

property," be held and absolutely treated as usurpation, and disregarded, let the consequences be what they may.

Distorted Ideas

To anyone familiar with the distorted misrepresentation of the theory upon which injunctions issue and who reads the debates which accompany the adoption of these resolutions, it is made clearly evident that the purpose was not to condemn a prevailing doctrine of law, but, under the guise of condemning a proposition which no court has sustained, that is, "that the employer has a property right in his employee," it was meant to encourage a general resistance and disobedience of injunctions issued in any labor dispute. Nor does this counsel of resistance stop with judicial decrees. It passes, as does any article of faith or philosophy, from the particular to the general. For a long time the leaders of closed shop unionism, and particularly Mr. Gompers, have insisted that "the right to strike is inalienable." In the discussion, the right of the individual, and the concerted act of a combination to quit or instigate others to quit for any purpose, has been hopelessly and perhaps not unintentionally confused, but in specific instances where such confusion was quite impossible, the responsible doctors of the closed shop philosophy have declined to recognize any power in this Government to regulate the right to quit in concert in Government or public utility employment any more than in private employment. It has been insisted by the same leadership that a strike of organized Government employees was not advocated or approved, but the existence of the right itself was distinctly asserted.

Demand Not to Be Obeyed

In the argument before both the House and Senate committees on interstate commerce during the past session of Congress, it was frankly declared that a prohibition by Congress of a combination to quit the service of a carrier for the purpose of enforcing a demand would not be obeyed. Questioned more closely on cross-examination, as to whether or not such an act, if held valid, would be obeyed and obedience counselled, the answer was evaded, but it was finally intimated that counsels of obedience would not be forthcoming.

The asserted identity between the obedience due to private organization and the allegiance due to the Government does not exist. To speak of them in the same breath necessarily lessens the supreme loyalty to Government, which lies at the foundation of all other loyalties and without which they cannot be. It subordinates citizenship to membership and tends to develop private principalities within the State. Still more demoralizing is the definite determination to reject the ultimate verdict of the last tribunal of civilization, the judiciary, and substitute for it the judgment of the litigant. If any faction may do that, all factions may do it. If any individual may do it with impunity, all individuals may do it with impunity. But if any individual or any interest may determine what laws he will obey and what he will not obey, each is his own Supreme Court and anarchy reigns supreme. No government can survive the operation of such a principle.

But, it may be said, this battle of ideas represents the conflicts of peace. Confront the nation with national peril, and these theories, yielding to the common perception of necessity, will find their advocates accepting the subordination to government which they seemed to reject. Let us then examine the test of war and determine whether or not the militant determination to compel the closed shop was subordinate to the demands of the great war. That ought to be the final test of adherence to a determination.

When We Entered the War

As a preliminary, it may help to notice the industrial circumstance under which we entered the war. The Naval consulting board had been gathering information respecting the munition capacity of American industry. Availing itself partly of this information, a commission appointed to advise Congress whether or not the Government should undertake to equip itself for the manufacture of its military necessities found, among other things, that, of some 18,654

plants available for the production of war materials, only about 10 per cent operated union shops. Of 1950 shops capable of producing fundamental military requirements, only 73, or less than 4 per cent, were unionized.

Great Britain, entering the war with its workers highly organized, found it necessary through the famous Treasury agreement with the British unions to secure an abandonment of their highly systematized restrictions and insure the introduction of non-union and female labor as an indispensable means of securing enlarged output. The United States entered the struggle with the great mass of workers upon whom it must depend for essential production outside union control. It was patent that industrial disputes might prove more destructive than German guns. Given this actual condition, would the determination to enforce union control, with its inevitable conflict, in the face of so vast a proportion of non-union workers, yield to the necessities of wartime production?

An Indispensable Condition

The record will disclose that the unionization of industry was made an indispensable condition for the united support of organized labor; that the opportunity for advancing organization, even under the threat of interrupting production, was clearly recognized, continually asserted and never surrendered. On the contrary, a popular belief that the use of the strike was even suspended was corrected and vigorously denied. The structure of trade unionism was declared so indispensable that its paid officials were urged to claim exemption or deferred classification, or have it claimed for them. Every effort to compel a choice under the draft between working or fighting was resisted, and the number and magnitude of strikes during a period of unparalleled political and industrial control by organized labor exceeded, during the war, any similar record of peace.

Let me examine these assertions in sequence, and let us translate the sometimes velvety language of publication into the recognized vocabulary of militant action.

Late in March, 1917, when our entrance into the war had become inevitable, nearly 150 delegates, representing some 79 National organizations affiliated with the American Federation of Labor, assembled in Washington, and presided over by the federation's president, discussed for two days and then published a carefully prepared and deliberated statement, announcing with specific definiteness the attitude of those for whom they spoke as leaders toward the conduct of the war. A single paragraph epitomized the viewpoint of the assembly:

We hold that industrial service shall be equally meritorious as military service. The same voluntary institutions that organized industrial, commercial and transportation workers in times of peace will best take care of the same problems in time of war.

It is fundamental, therefore, that the Government co-operate with the American organized labor movement for this purpose, since in Government factories and private establishments, in transportation agencies, all should conform to trade union standards.

What this meant was made plain in various authoritative interpretative statements made by the president of the federation during the anxious months which followed.

(To be continued)

"Steam versus Electric Driven Power House Auxiliaries" was the subject of a paper read at the regular monthly meeting of the Engineers' Society of Western Pennsylvania in the William Penn Hotel, Pittsburgh, Tuesday evening, Dec. 14., by G. G. Bell, engineer of West Penn Power Co., Pittsburgh.

Figures recently compiled give Detroit fourth place among cities of the country in the number of foundries located within its limits. This number is now 122.

Buena Vista blast furnace of the Alleghany Ore & Iron Co., Buena Vista, Va., will be blown out for an indefinite period Dec. 24. Iron Gate blast furnace will be banked on the same date for 10 days.

Finds Efficiency Lacking in Many Shops

Inspection Trip of 70 Shops and Factories
Reveals Fact that Large Percentage Has
Only Partial or No System of Management

BY H. M. FITZ

A MECHANICAL engineer, representing a large manufacturing company, spent several months recently visiting and inspecting organization systems of various manufacturers in different parts of the United States, and the writer had the good fortune to accompany him on the greater part of this interesting investigation that included visits to more than 70 shops and manufacturing plants of all descriptions, varying in size from some employing 150 men to others having 9000, and over, employees. The object of the trip was to find out how plant managers do things and to help them, if possible, in exchange for the courtesy extended.

Out of the plants visited, 22, or less than one-third, had an efficient system of management in their offices and shops. About 16 had partial systems of management. Some of these had good planning departments but no follow-up system in their shops. Others had stock record systems, or methods for checking tools and drawings taken out into the plant. The remainder had no system whatever.

The stock record system in many plants was found ineffective, the defect of most of these systems being a failure to have a double check on stock. Under this incomplete system the planning department or foreman issues a requisition for stock and there is no check against this requisition. Consequently, a record is not kept of material taken from stock and the plant runs out of items in stock when its records should have shown that these items were running low, so that they could have been replenished in time. This could have been avoided by having a double record on stock, with one requisition going to the stock department and the other to the planning department.

Another thing that came to our attention was failure of many plants that were shut down to take inventories while not running instead of waiting until January when they may be starting up at full capacity. They should take their inventories at such time and be ready to go ahead with production without interference of inventories at the first of the year. Apparently the only reason for delay in inventory taking is that they have been in the habit of taking inventories in January.

Merit of Organization Systems Not Recognized

We secured an expression on shop organization systems from the management of practically every plant visited. Some of the plant managers believed in systems and declared they could not get along without a system. Others did not believe in organization systems but were doing something along the line of system because someone else they knew had a shop system. A few could not see any merit in a shop organization system and seemed to worry along the lines of least resistance.

If this report were to go into full detail as to the many different ways things are being done in plants, it would fill a good-sized book. Certainly the field for improvement does not seem to be growing smaller very fast. At times, in the rush of business, certain parts of a system may be neglected, but this neglect will be felt sooner or later. Now

is the time to reconstruct an existing organization system, or to install a new system if a plant has been operating without a system. A manufacturer can save time, money and worry if he will install an organization system in dull times and be prepared to go ahead when he begins to receive orders.

The writer of an article in a mechanical magazine recently stated in referring to welding: "Our greatest trouble is breaking in operators and holding them after they have learned to handle the torch." This same condition we found in many shops on other classes of work. Some plants kept individual performance records of employees but were not using them to advantage. These had no record of the cost of breaking new men in on different classes of work, apparently feeling that it is cheaper to teach new men than to give a man two cents raise in his hourly rate after he has become more efficient. Also, they do not appreciate that an employee's interest in learning new things ceases because of the lack of incentive, this incentive being more pay. In just one plant we found that employees receive an advance in hourly rates and bonus increases according to efficiency records without having to ask for them. In this plant the labor turnover showed a very low percentage. Some of the workmen were receiving exceptionally good wages under the bonus plan and doing an exceptionally large amount of good work, and the unit cost was considerably lower than the day rate cost had been.

In another plant the idle man and machine hours averaged 26 per cent of the total production hours. In other words, more than one-fourth of the productive force was waiting on the other three-fourths all day long. Proper planning to balance up this condition would have eliminated this loss of time. At the same time strenuous retrenching was going on all over the country in nearly all manufacturing plants in one way or another. The management of this particular plant stated that at that time he would not make any changes that would tend to decrease the force or hours, as it looked better to his competitors if he kept on operating as he had been. However, later, when business picked up again he would consider some changes.

Inefficient Planning and Time Study Systems

Out of 18 shops that were using a premium, bonus or piecework system, three had practical men for time study and rate setting. In an extreme case the time study and rates were signed by the man who made them and also by the foreman of that department, by the general foreman, superintendent and production engineer, and the latter sent them to the advisory board for approval. By the time all these men had approved the time study and rates some days, or weeks, had passed, the job was finished and the operator was dissatisfied because he knew he could have produced more work and made more money if the rate had been given him in the beginning. The company, of course, was the big loser of men and machine hours, overhead and production. It figured that the standard rate would be used the

next time that the job came through, and ordinarily could be used.

However, the planning of the work, if there is any planning, is generally done by the foreman and, consequently, the job seldom, if ever, went through the shop the same way twice in succession. The foreman would very often place the job on a type of machine that was not busy and as a result the time studies taken in performing the particular operation on a different type of machine could not be applied. This is one reason why figures showed that at no time was the plant operating at over 60 per cent of production hours on bonus work. A practical man making the time studies and setting the rates, with red tape cut out, is now saving the company an endless expense. The time study can be depended upon, the price is more nearly correct, the operator is satisfied and the productive hours in the plant on bonus work will go up possibly to 95 per cent.

Timekeeper's Double Slip Prevents Errors

We arrived at another plant while they were paying off the men. The departments were lined up in numerical order and the men turned in their receipts as they passed the pay window and received their wages. Each line of workmen kept getting smaller, except one line over at a window at the main office, which kept getting larger. This line was composed of men from all departments. When we asked about this line we were told that the men were lined up in front of the pay shortage department. When a man gets his money he knows, or should know, whether the amount is correct or not. If he finds that he is short, he gets into this line and reports the amount of shortage, his name, number, etc. To look up all these shortages and to make corrections, and to keep a record of the amount of shortages, required the entire time of one man and part time of two others, for 200 to 300 men were short every pay day.

The shortages were caused mostly through time-keeping errors, rates and extensions, and were the cause of a great deal of dissatisfaction among the employees and considerable expense to the company. As shortage corrections were made the time books and pay roll also had to be corrected and a special shortage check written out and delivered to the man. All this time and trouble and expense of a shortage man has been eliminated by issuing a double slip of each day's earnings to each man by his timekeeper, and if there is an error the correction is made at once while the matter is still fresh in mind. Then the employees think that they are being treated squarely and are better satisfied, and at the same time there is a saving to the company.

Improved Inspection Methods Reduce Changes

In a gas engine plant all engines were given at least a six-hour running test, not to find that the engine would deliver the guaranteed horse power, but to find the noise, slap, drag, pull, etc., at an average cost of not less than \$4 per engine. The test record of engines showed that changes were made on every engine—either on the pistons, connecting rods or some other part—and as thousands of engines were being built every month this expense ran into a very large amount. Consequently, a complete change in the drawings and an inspection system was recommended. Under the system that is now being placed in effect there will be practical limits on the drawings, standard gages for the workmen, inspection during the process of manufacturing according to the limits and standard

gages, and inspectors will have authority to throw out the work that is below standard. A record will be kept of the spoilage, the spoilage losses will be figured out in dollars and cents and the figures shown to the foremen of the respective departments. Then the manufacturer will be getting parts that need no filing, reaming, re-tapping, fitting and very little grinding in the assembling, and no testing. Then when they are shipped out they will stay out. Also, when repair parts are ordered the part number should be used instead of the name of part, and size. Oversize parts should have a different part number from the standard part, to save confusion.

At another plant over 1000 mechanics had been laid off and paid off three days before our arrival. One noticeable thing about this "graveyard" was that it had been live at one time, as air hammers, wrenches and tools of all descriptions were lying around on the floor and benches, and there were drills, reamers, dogs, jigs, drawings, etc., at nearly every machine. A tool and drawing checking system was recommended in this plant, and also that all tools, jigs and fixtures should be collected and put into condition and then placed where they belonged in the tool crib. Then there should be an inventory of all the tools, a record of them should be tabulated, a drawing cabinet should be put into the tool room with hooks for checks and blueprints should be mounted on a cardboard and placed in numerical order in a cabinet. By following this plan, all tools, drawings, jigs and fixtures would be checked out systematically when the plant started up again.

No System for This Manager

A shop employing about 300 men, manufacturing a staple article and sold according to the competitor's price, had very little overhead and practically no system and was as near a one-man shop as we ever saw. There was no planning department, no cost system, no inspection, no timekeepers, no tool, machinery or stock record systems, no reward or compensation to employees except hourly rate paid according to the clock card. The machine operators were rated at \$1 per hour and helpers, labor, etc., at 50 cents an hour. If a man rang in late his time started from the next hour. If he went out at, say, 3:30 o'clock, he was paid up to 3 o'clock. Each one of a certain number of men, the machine men, was paid even dollars and the other employees were paid even half dollars. The manager of this plant had one assistant in the shop and two girls in the office. This was practically all the overhead he had. In talking the matter over with him the suggestion was made that the production could be doubled with a 20 per cent increase of the present total cost, thereby decreasing the unit cost very substantially. The manager assured us that it could not be done, that he had been in the business for forty years and knew every item of it and had costs, etc., in his head. No one was going to experiment with his plant, and he would have no system as long as he had anything to do with running the plant.

At another plant a condition existed that was of more than passing interest to us. The manager explained to us that they had tried to work out a planning system of their own by following word for word a book on system. However, as the system that was inaugurated held up and interfered with production they went back to their old method of handing the orders to the foreman and letting the foreman worry. This book was probably all right but did not, and possibly could not, mention in detail all conditions and peculiarities of the many

different actual working conditions that really do exist in a plant. The manager evidently tried to make the plant fit a system that was not suited to its conditions. We could see no reason why they should not have had a most efficient system in this plant had they studied the book, read between the lines and used common sense in connection with their knowledge of their own conditions and requirements. This is one of the places where they say, "System is fine for the other fellow, but our plant is different."

In a railroad shop we noticed that the certain job that a machinist and helper used to do very satisfactorily was now being done by two machinists and two helpers, and these four men had to work overtime to accomplish the same results formerly accomplished by two men. The reason was that when the Government took the railroads over, the system of rewarding the efficient workmen was discontinued. Therefore, more help was required for

the reason that there are few workmen who will deliver as much good work under straight hourly rates as they will under a reward system.

In this railroad shop most of the men had been well-trained specialists and earned good money, but when the incentive was removed, rather than drop back with the drones and loiter on the job, they quit and went to work for private concerns where they were allowed to work at the pace that they were accustomed to. In this shop some jobs had five men actually doing only two men's work and causing many repair costs to increase over 100 per cent. This was all very encouraging to unionism. The labor unions have secured many members among those who stayed on the job in this railroad shop thinking that the Government was favoring the unions and that they had to join. One of the railroad officials remarked that it would be many moons before they got back on an efficient labor basis.

Railroad Earnings Disappointing

WASHINGTON, Dec. 14.—Earnings of the railroads in October, the second month under the new freight and passenger rates, have proved disappointing. While the Interstate Commerce Commission has not compiled complete figures on October earnings as yet, reports from practically all the large railroads indicate that the roads as a whole fell considerably short of earning a net railway operating income in October equivalent to that month's prorata share of a year's return at 6 per cent on the aggregate valuation of the property of the railroads.

The net railway operating income of the railroads as a whole is estimated at approximately \$90,000,000 for October. This will be about \$20,000,000 short of the amount necessary to yield the annual 6 per cent return. The earnings in October were somewhat better than in September, but there was not as great an improvement as was hoped for.

The final figures are expected to show that the operating revenues in October were only about 25 per cent greater than in October, 1919. The increased freight and passenger rates were expected to produce an increase of from 30 to 35 per cent in operating revenues.

There is little likelihood of a much better showing for November in view of the fact that traffic began to fall off in the latter part of that month. Railroad officials, however, will refrain from making any definite decision as to the advocacy of the new rates until there has been a considerably longer test.

The falling off of traffic in November is indicated by the figures as to the number of cars loaded with revenue freight which are compiled weekly. The number of cars loaded in the week which ended on Nov. 20 was 880,928, or 26,000 more than were loaded during the corresponding week of 1919, and 23,000 more than during the corresponding week of 1918. The total, however, was 39,000 cars less than during the preceding week. During October, loadings averaged close to 1,000,000 cars a week.

Cause of Breakage of Car Wheels

WASHINGTON, Dec. 14.—The annual report of the Department of Commerce includes an interesting item concerning the work of the Bureau of Standards in an investigation of the cause of breakage of car wheels.

"As a result of study and experiment," says the report, "the Bureau found that the breakage was caused by the relative overheating of the car wheel at the periphery by prolonged application of the brake shoes while descending long grades. The Bureau experimentally reproduced this condition on sample wheels carefully measuring the temperatures and checking the theoretical explanation. It was found that of the 28 wheels tested only 12 withstood the brake application. The remaining 16 broke on account of strains caused

by the difference in expansion at the periphery and at the center of the wheels, which results from the difference in temperature produced."

Dover Furnace to Be Relocated

The historic Dover furnace at Carlisle, Tenn., of the Dover Iron Co., which was built in 1828 and last rebuilt in 1903 and 1904, is to be relocated. The furnace is on a branch line, running out of Tennessee Ridge, Tenn., on a railroad operated by the company, and as nearly all of the wood near the furnace has been cut, the company has been compelled to go a long distance for charcoal, and has made arrangements with by-product plants some distance from the furnace, for a supply of charcoal.

It is now proposed to remove and improve the old plant, locating it on the main line of the Louisville & Nashville Railroad at Cumberland. There will be no change in the character of iron products, as the same kind of raw materials and methods will still be used, but the new plant will be made up of part of the old with some new improvements.

The company has arranged to continue operating the present Dover furnace until the new plant is in operation and there will be a moderate tonnage to sell for 1921 delivery.

May Extend Effective Date of Section of Clayton Anti-Trust Act

WASHINGTON, Dec. 14.—Congressional action to extend the effective date of Section 10 of the Clayton anti-trust act from Jan. 1, 1921, to Jan. 1, 1922, is in prospect. This is the section which prohibits railroads making purchases to the amount of more than \$50,000 in the aggregate in any one year from companies in which an official of the railroad in question may be interested.

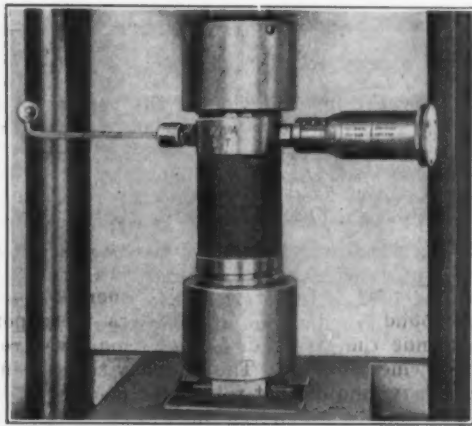
The Clayton act was passed in October, 1914, and Section 10 was to become operative two years later, but the effective date was later postponed by Congress to Jan. 1, 1919, except as to corporations organized after Jan. 8, 1918. The effective date was again extended to Jan. 1, 1921, in the transportation act. Bills extending the date to Jan. 1, 1922, have been introduced by Senator Cummins in the Senate and by Representative Esch in the House. The Senate committee on interstate commerce has favorably reported the Cummins bill to the Senate, and action is expected in both houses before the holiday recess.

Senator Frelinghuysen of New Jersey has introduced a substitute for Section 10 of the Clayton act, his substitute being intended to become effective Jan. 1, 1922. The Frelinghuysen bill would have practically the same effect as the section which would be repealed except that it would exempt dealings between common carriers under certain conditions which are stipulated in the bill.

Standardizing Boxes for Checking Testing Machines

Amsler standardizing boxes for checking tensile and compressive loads of testing machines, lever or hydraulic types, are announced by Holz & Co., 17 Madison Avenue, New York. The instrument can be used for checking horizontal and vertical testing machines, and is acted upon by the testing machine in exactly the same way as the test bars are treated by the machine to be checked, and the load acting on the instrument is read off on a direct-reading scale which forms a part of the instrument itself. The accuracy of the indications of each standardizing box is stated to be plus or minus 1 per cent for any load over about one-sixth the maximum load of the instrument. The boxes are made universal, i.e., for measuring both compressive and tensile loads of 20,000, 60,000 and 100,000 lb. maximum. The calibration can also be effected in kilograms.

Each instrument has engraved on it the numbers



Tensile and Compressive Loads of a Testing Machine Can Be Checked by Amsler Standardizing Box

corresponding to the readings which should be obtained when the instrument is subjected to certain definite loads. These constants are determined at the makers' works by direct standardization with dead weights. The readings for loads other than those which are engraved on the instrument may be found by interpolation.

The standardizing box is a hollow cylinder filled with mercury, and the overflow or backflow of the mercury is measured on a capillary tube mounted into the side of the instrument. On this tube is a sliding mark to which the level of the column of mercury is always brought by turning the micrometer screw. The tip of this screw dips into the space filled with mercury, and by entering into this space it forces back the mercury into the capillary tube. If now this hollow cylinder is subjected to a purely axial compression, its volume decreases. On account of this, the amount of mercury equal to the diminution in volume is forced out into the capillary tube. The expelled mercury which cannot be kept in the tube collects in the bulb at the end of the tube. By turning the micrometer screw the column of mercury is brought back to the level of the mark. The amount of turning given to the micrometer screw is thus a measure of the decrease of volume of the hollow cylinder.

The alloy steel cylinder shortens proportionally with the loading which acts on its ends. The decrease in volume, and consequently the amount by which the micrometer screw must be turned, are therefore proportional to the load. To prevent any permanent deformation the cylinder is made of alloy steel, treated and aged by a specially developed process.

If the hollow cylinder is pulled precisely in the direction of its axis, it stretches and the volume is increased. The level of the mercury column consequently falls back, and to bring it back to the zero mark it is necessary to advance the plunger of the micrometer screw into the mercury space. This is exactly the reverse of what happens during a compression loading of the box.

Possibilities of Cast-Iron Thermit Welds

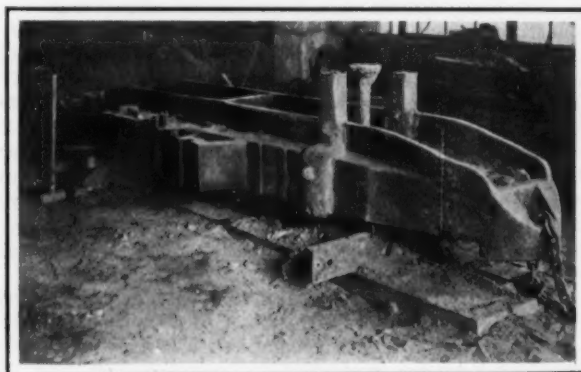
Almost every day in various industries the question arises as to the feasibility of welding cast iron sections of widely divergent sizes and shapes. The following explanation regarding the conditions governing cast iron welding recently prepared by the Metal & Thermit Corporation, New York, may therefore be of interest to those contemplating repairs of this nature.

In thermit welding, the superheated steel produced by the reaction, when tapped into the mold surrounding the weld naturally fuses back into the fractured parts 2 or 3 in. on either side and the whole mass solidifying at one time effects the repair. The excess metal of the weld may then be removed or not, as the necessity indicates.

In cast iron welding, steel is the welding medium and the weld material will, therefore, necessarily consist of a mixture of this steel and the cast iron of the parts being welded. The graphitic carbon in the cast iron combines with the thermit steel, thus making a high carbon steel which usually can be machined only by grinding, but it is not so brittle as cast iron and is physically stronger.

In the second place, in considering thermit repairs of cast iron, it should be borne in mind that the weld material is steel and, therefore, has double the shrinkage of the cast iron. This difference in shrinkage is of no importance where the section being welded is approximately square or equi-axed. Where, however, the length of the section at the fracture is four or five times its thickness, this difference in shrinkage is evidenced by one or more minute cracks perpendicular to the line of the weld and extending through the weld material only. These cracks are naturally caused by the difference in shrinkage, the cast iron parts tending to restrict the shrinkage of the thermit steel along the length of the piece. Such hairline cracks will be found in the welding of sections such as, for instance, 12 x 24 in., but would not be found in sections 12 x 12 in. The cracks are unimportant as they are parallel to the line of strain.

Where the length of a fracture is not more than four or five times its thickness and where the subse-



Cast Iron Thermit Weld Before Removing Riser and Pouring Gates

quent machining can be accomplished by grinding, a thermit weld can be successfully made. The accompanying illustration shows a weld of this character recently made.

Newark Foundrymen Hold Joint Meeting

"Molding Machines in the Jobbing Foundries," illustrated with lantern slides, was the scheduled subject of Edwin S. Carman, Cleveland Osborn Mfg. Co., before a joint meeting of the Newark Foundrymen's Association and the Gray Iron Club at the Down Town Club, Newark, N. J., on Dec. 15. Mr. Carman recently became president of the American Society of Mechanical Engineers. A dinner was served at 6.30 o'clock. A vocal soloist entertained.

The annual Christmas celebration of the Pittsburgh Foundrymen's Association will be held at Hotel Chatham, Pittsburgh, Monday evening, Dec. 20.

ON AN OPEN-SHOP BASIS

Reading Iron Co. Strike of Five Months Ended Without Concessions

The resumption of operations in all departments in the Reading Iron Co., Reading, Pa., on Dec. 1, marked the end of a five months' strike in which the issue was clearly drawn between the open shop and the closed shop. The strike came in the latter part of June, after unsuccessful efforts by a committee representing members of various labor unions to secure recognition by officers of the company. The committee had notified the plant superintendents that unless the committee was received by the management by June 28 work would be stopped on June 30. Most of the plants of the company were closed down on June 26 on account of a shortage of coal and the inability of the company to make shipments due to the railroad strike.

Some months previous a plan of employee representation was offered to the workers. It provided for complete representation of all employees regardless of membership or non-membership in labor unions. The plan was refused on account of the opposition of the labor unions, although a great many of the employees were in favor of it. In a statement made in a Reading paper after the strike had been under way about a month the company said that it had always maintained an open shop and expected to continue to do so. It had refused to meet the committee from the unions because it represented only those employees who had labor union cards.

On July 1 the company posted notices to the effect that the rate for puddling would be \$14.50 per ton, with other tonnage rates in proportion, representing an advance of \$1.25 per ton over the rate paid in May and June. The average rate for puddling in the year ending with June, 1920, was \$11.38 per ton. The proposed rate of \$14.50 was over three times that paid in 1914, which was \$4.50. The hourly rates that had been paid to day workers represented advances averaging from 200 to 300 per cent since 1915.

In the work of organizing the men preceding the

strike, the aim was to unionize all the 6000 employees and to have these represented in negotiations with the company by a federated union committee made up from the various craft unions. During the strike some of the craft unions broke away from the organization, due to a disagreement with officers of the Amalgamated Association, which was the principal union involved. The machinists decided to return to work and were followed by the electricians and later by the bricklayers. The company was able to keep its foundry, machine shop and forge departments in operation and afterwards to resume operations at its charcoal bloomery, where the men were never allied with the Amalgamated Association. All the puddlers in the various mills continued on strike, which made it impossible to operate the finishing mills and tube works. In most cases the mill employees were in sympathy with the puddlers, those at the tube works also demanding a sliding scale.

After five months of idleness, pressure was brought to bear on the strike leaders late in November by men who desired to return to work. It was finally decided to call an eastern conference of the Amalgamated Association at Lancaster, Nov. 26. The delegates from the lodges in the Reading Iron Co. mills were instructed to vote in favor of returning to work. At the meeting Amalgamated Association officers advised the men to return at the best terms they could secure. In an interview with the company later, the Reading men said they were willing to go back with the understanding that there would be no discrimination. The company replied that it would give all its employees work, but that those whose positions had been satisfactorily filled would have to take such other positions as could be found for them. The strikers thereupon voted to continue the strike until every man was reinstated in his former position. The company then notified the men that any who did not return for work by noon on Tuesday, Nov. 30, should consider that their positions were no longer to be held for them. Later the men rescinded their action and decided to go to work. All the plants have been running full since Dec. 1. The resumption of work was without any promises on the part of the company and on a strictly open-shop basis.

Tubular Departments of Steel Plants Busy

YOUNGSTOWN, OHIO, Dec. 14.—Tubular departments of independent mills continue to maintain the best ratio of operations. All six mills of the Republic Iron & Steel Co. are being operated to capacity and are maintaining partial operations in the Brown-Bonnell and Bessemer departments and the plate mill, which is producing skelp.

Of the 66 open-hearth furnaces in the Mahoning Valley, 32 are active, and finishing mill operations are proportionate.

The Youngstown Sheet & Tube Co. added a second bar mill to the active units on Monday. While this company is maintaining its steel department on a 65 per cent basis, its finishing schedules are probably at 75 per cent.

British Empire Steel Corporation

It is generally believed that the issuance of an official statement to the effect that the organization of the British Empire Steel Corporation, Montreal, Que., has been dropped or modified is near at hand. The probability of this being the fate of the venture has been the subject of much discussion in financial circles for weeks past, but in circles close to the merger interests no admission in this connection has been made. It is now generally admitted, both in Montreal and London, England, circles close to the company that it will be impossible to carry out the financial arrangements necessary to the completion of the contracts with the various units of the merger and that in consequence it will be impossible to proceed. On the other hand, it is generally understood that an alternative scheme will be arranged to bring Dominion Steel Co. and the Nova

Scotia Steel Co. together, but all other units are to be dropped. The merger proposition was one of the most ambitious ever undertaken in connection with Canadian industries.

Large Decrease in Steel Corporation's Orders

Unfilled orders on the books of the United States Steel Corporation, Nov. 30, were 9,021,481 tons, compared with 9,836,852 tons on Oct. 31. This is a decrease of 815,371 tons, against one of 537,952 tons on Oct. 31; 430,234 tons on Sept. 30, and 313,430 tons in August, an increase of 139,651 tons in July, 38,352 tons in June, 580,718 tons in May, 467,672 tons in April, 389,994 tons in March, 216,640 tons in February and 1,020,075 tons in January. The unfilled tonnage a year ago was 7,128,330 tons, or 1,893,151 tons less. The table below gives the unfilled tonnage at the close of each month, beginning with January, 1917:

	1920	1919	1918	1917
Jan. 31	9,285,441	6,684,268	9,477,853	11,474,054
Feb. 28	9,502,081	6,010,787	9,288,443	11,576,697
March 31	9,892,075	5,430,572	9,056,404	11,711,644
April 30	10,359,747	4,800,685	8,741,882	12,183,083
May 31	10,940,465	4,282,310	8,337,623	11,886,591
June 30	10,978,817	4,892,855	8,918,866	11,383,287
July 31	11,118,468	5,578,661	8,883,801	11,844,164
Aug. 31	10,805,038	6,109,103	8,759,042	10,407,049
Sept. 30	10,374,804	6,284,638	8,297,905	9,833,477
Oct. 31	9,836,852	6,472,668	8,353,293	9,009,675
Nov. 30	9,021,481	7,128,330	8,124,663	8,897,106
Dec. 31		8,265,366	7,379,172	9,381,718

The largest total of unfilled orders was on April 30, 1917, when it was 12,183,083 tons. The lowest was on Dec. 31, 1910, at 2,605,747 tons.

The spring convention of the National Machine Tool Builders' Association will be held on Thursday and Friday, May 19 and 20, 1921, at the Hotel Traymore, Atlantic City, N. J.

FOR BURNING POWDERED COAL

New Features of Grindle System, Including Conveying and Control

The Grindle equipment for burning powdered coal, as manufactured by the Combustion Economy Corporation, 1901 South Rockwell Street, Chicago, was briefly described in THE IRON AGE of Aug. 14, 1919, p. 444. The Grindle system of conveying coal from the powdered coal reservoirs to the hoppers serving the burning equipment presents several new features of interest. Results achieved with installations of the equipment, together with modifications in its design, are also available.

In the Grindle equipment the powdered coal is elevated to a storage hopper, from which it is passed by gravity to a weighing tank. When the tank is filled the flow of coal from the hopper is stopped by a shut-off cock controlled by a drop chain connected with a lever. All the connections with the weighing tank are flexible, so that the tank alone rests on the scales. The storage hopper above the tank is separately supported by steel columns. Ordinarily the storage hoppers range from 5 to 30 tons capacity to serve hoppers at the furnaces ranging from $\frac{1}{2}$ to 10 tons capacity. The hopper used at the National Malleable Castings Co. plant at Chicago has a capacity of 5 tons and serves three melting furnaces with feeding hoppers of 8 tons capacity each. It is asserted by the engineers of the Combustion Economy Corporation that this storage hopper could serve 10 furnaces of the same size.

The coal is conveyed from the tank to the furnaces by air. The latter is forced by a compressor into an accumulator, shown in the drawing, which provides a constant pressure. From the accumulator the air passes through a separator, to remove moisture, and then into the top of the weighing tank. As an additional safeguard, to prevent clogging of the connection between the tank and the conveying line, air is also piped directly from the accumulator through a second moisture separator to a feeder just below the discharge end of the tank.

The feeder is an enlargement of the coal conveying

pipe and contains three connected air jet castings, which force the air received directly from the accumulator on an angle upward into the main conveying duct above. The purpose of the air jets is to break up accumulations of coal which might stop the passage between the tank and the conveying line and to supplement the air pressure in the weighing tank. An air meter located between the first moisture separator and the tank and feeder indicates the consumption of air, which is usually about 200 cu. ft. per ton of coal. At 10 lb. air pressure coal is blown from the tank to the furnace hoppers at the rate of 18 tons per hr. It is to be observed that the powdered coal is conveyed as a solid rather than as a mixture of coal and air.

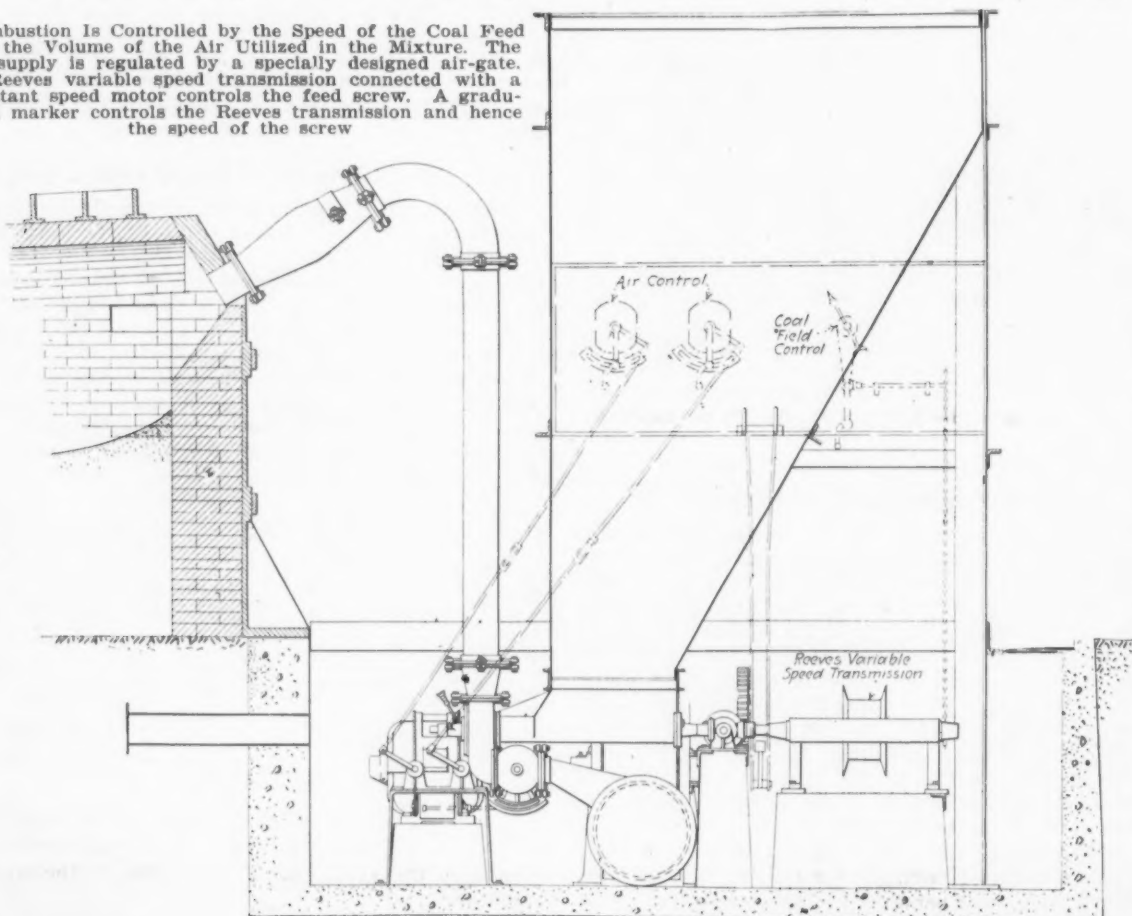
As indicated, the receiving end of the conveying line is the feeding hopper serving the furnace. On the drawing, both front and side views of a furnace storage hopper are shown. The arrow indicators to be seen on the front of the hopper show the height of the coal received. When the hopper is filled and the top arrow is turned, it makes an electrical connection which closes a switch valve in the conveyor line, thereby stopping the inflow of coal.

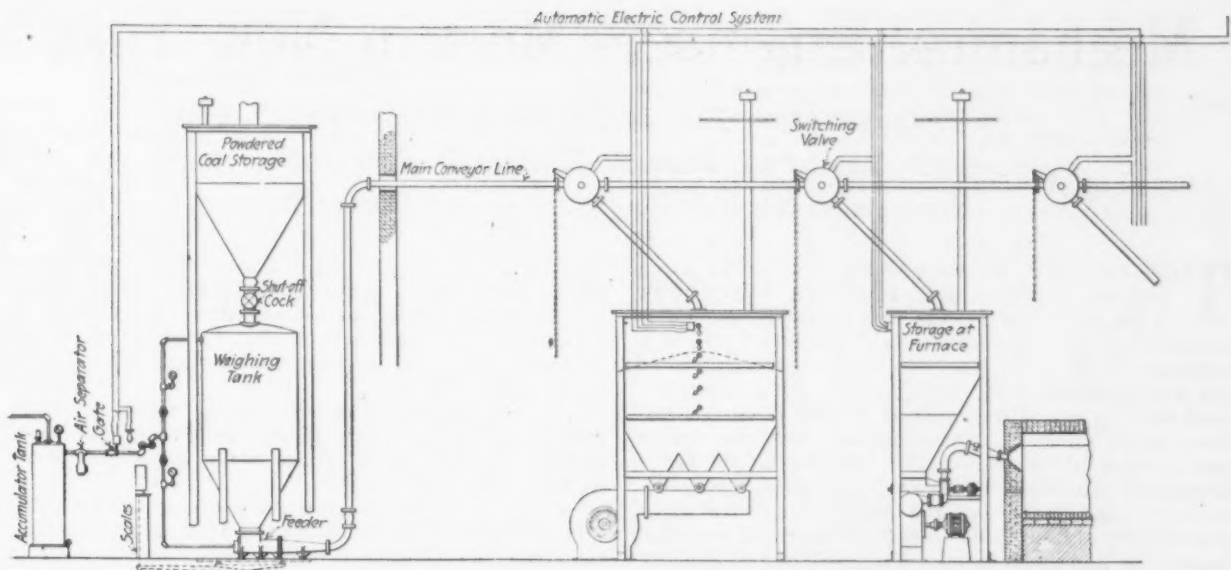
The length of the main conveying line in the National Malleable Castings Co. plant at Chicago is 650 ft., and when other furnaces are equipped with the Grindle burning apparatus, will be 1200 ft. In case a furnace is less than 100 ft. from the pulverizing plant, a screw conveyor can be used in place of the high-pressure transport system described.

The coal flows from the furnace storage hopper to feed screws, one serving each burner. The feed worm is cast in a special mold, giving it a gradual taper which tends to loosen up the coal at the discharge end and prevent packing. As a further precaution against packing, a revolving disk is situated at the end of the screw. The coal is delivered by the worm to a mixing chamber, where it is mixed with air for combustion and carried to a so-called carbureter, which may be 3 to 100 ft. from the coal control. The air is supplied by a low pressure blower direct-connected with a constant speed motor. The mixture conveying pipe and the burners are of cast iron, with tongue groove joints incased in cement to prevent leakage.

Combustion is controlled by the speed of the coal

Combustion is Controlled by the Speed of the Coal Feed and the Volume of the Air Utilized in the Mixture. The air supply is regulated by a specially designed air-gate. A Reeves variable speed transmission connected with a constant speed motor controls the feed screw. A graduated marker controls the Reeves transmission and hence the speed of the screw





In the Grindle System of Conveying Powdered Coal, the Fuel Passes by Gravity to a Weighing Tank and Then Is Carried by Air Pressure to Melting Furnace Hoppers. Both front and side views of the furnace storage hoppers are shown. The arrow indicators to be seen on the front of the hopper show the height of the coal received. When the hopper is filled and the top arrow is turned, it makes an electrical connection which closes a switch valve in the conveyor line, thereby stopping the inflow of coal.

feed and the volume of the air utilized in the mixture. The air supply is regulated by a specially designed air-gate, which is connected with a control dial graduated to indicate the size of the gate opening. A Reeves variable speed transmission connected with a constant speed motor is used to control the feed screw. A graduated marker similar to that used to regulate the air valves controls the Reeves transmission and hence the speed of the screw. Both the marker for the air valve and those for the screw speeds may be set in accordance with the carbon dioxide analysis of the stack or on the basis of previous experience, after which a laborer can operate them successfully and know he is getting the proper mixture of air and powdered coal.

The Grindle system of burning powdered coal has been installed both at the plant of the National Malleable Castings Co., Chicago, and at the Buffalo plant of the American Radiator Co. When the Grindle equipment was first installed it was expected that the reduction of slag resulting from the decreased oxidation of the metal would be replaced by the ash from the coal, but it was found that the slag was reduced from seven and eight truck loads to three and four, and that no other ash could be found except a small amount which dropped in the bottom of the stack, aggregating about three wheelbarrow loads per week. It was also discovered that the stack temperature was about 400 deg. Fahr. less than when the furnace was hand-fired.

ELECTRIC WELDING OF STEEL

Properties of the Arc-Fused Metal—Merits of Different Types of Electrodes

The results of a study of the properties of the metal of arc-fused welds was given in a paper presented at the Washington section of the American Society of Mechanical Engineers and reprinted in the October issue of the publication of the society. The paper was read by H. S. Rawdon of the Bureau of Standards, Washington, and gave the results of the work carried out by the Bureau. The study of the characteristic properties of the fused-in metals was the primary object of the investigation, with the determination of the merits of different types of electrodes a secondary consideration.

The metal was deposited in the form of blocks on the end of a section of $\frac{1}{2}$ -in. plate of mild steel, each block being large enough to permit a tension specimen 0.505 in. in diameter, 2-in. gage length to be machined out of it. The fused metal was deposited in a series of "beads" so arranged that they were parallel to the axis of the tension specimen which was cut later from the block.

Two types of electrodes were used, a pure iron and a low-carbon steel with approximate carbon content of 0.02 and 0.15 per cent respectively, each type ranging in sizes from $\frac{1}{8}$ in. in diameter to $\frac{1}{4}$ in., so that a considerable range of current densities was possible. The electrodes were used both in the bare condition and slightly coated with a paste of an oxidizing and refractory nature.

The speaker stated that from the tests no definite conclusions could be drawn concerning the merits of various electrodes. The specimens had properties similar to those of steel castings of a rather inferior grade, the variations noted being of the order which might be

expected for such cast steel of inferior quality. No material advantage was observed due to coating the electrodes, so far as the properties of the metal obtained were concerned. The most striking feature in the mechanical properties was low ductility of the metal. The fracture in all cases revealed interior flaws and defects. There appeared to be no definite relation between the soundness of the metal and the condition of the deposition, that is, for the range of current density used; nor did either type of electrode used show any decided superiority over the other with respect to porosity of the resulting fusion.

The general type of microstructure was found to vary in the different specimens and to range from a condition designated as "columnar" to that of a uniform fine equi-axed crystalline arrangement. This held true for both types of electrodes, whether bare or covered. It was inferred that the metal of the layers which were deposited during the early part of the preparation of the specimen is refined considerably as to grain size by the successive heatings to which it is subjected as additional layers of molten metal are deposited. In addition it was noticed that the columnar and coarse equi-axed crystalline condition appeared to predominate with fusion at high current densities.

Microscopic examination of etched specimens revealed that the effect of the grosser imperfections of the metal, that is, oxide inclusions and film, "metallic globule" inclusions, and lack of adhesion between successive layers of the weld metal, were the principal factors governing the mechanical properties of the specimen.

The speaker concluded from the tests that it seems impossible to fuse the metal without serious imperfections, and that the mechanical properties of the arc-fused metal are, therefore, dependent to an astonishing degree upon the skill, care and patience of the welding operator.

Mechanical Engineers Meet in New York

Transportation, Fuel and Power Problems Popular Topics at Annual Meeting — Technical Sessions on Machine Shop, Design and Research

THE forty-first annual meeting of the American Society of Mechanical Engineers, held in New York Dec. 7 to 10, the first to be worked up in co-operation with the professional sections, brought a registration of 1900. Sessions under the auspices of the fuel, machine shop, management, power and railroad sections as well as meetings devoted to transportation, forest products, general design, research, textile and general topics were held. Transportation was a prominent theme, all of Thursday morning being devoted to consideration of the problems and the probable future of the three classes of carriers: railroad, water way and motor truck. The fuel, power, machine shop and design sessions aroused considerable interest.

Dr. Brashear and H. L. Gantt Eulogized

A memorial to Doctor Brashear on Wednesday evening and a session on Wednesday morning commemorating the work of H. L. Gantt were features of the program. Dr. Henry S. Pritchett, president of the Carnegie Foundation for the Advancement of Teaching, delivered an oration on John Brashear, scientist and humanitarian. "It would be difficult," Dr. Pritchett said, "to recall the name of any person in recent years who has received the outward expression of real devotion from so many men, women and children of all stations of life and of all nationalities, as did John A. Brashear." The life and work of Henry L. Gantt, a pioneer in industrial management and an exponent of the human element in its relation to industry were the themes of addresses by Fred J. Miller, president of the society; E. A. Lucey, management engineer, New York; Marshal Evans, Eagle Picher Lead Co., Chicago, and W. N. Polakov, construction engineer, New York. An appreciation from Great Britain by James F. Butterworth, London, England, and one from France by C. de Freminville, Schneider & Co., Paris, France, were read.

The annual address delivered by Fred J. Miller as president of the society, and the conferring of honorary memberships upon Lord William Weir, Glasgow, Scotland; Honorable Sir Charles Parsons, London, England; Commandatore Pio Perrone, Genoa, Italy; Rear Admiral R. S. Griffin, U. S. Navy; Capt. Robert W. Hunt, Chicago and Dr. Samuel M. Vauclain, Philadelphia, were briefly outlined in last week's issue of THE IRON AGE.

New Sections Organized

In opening the business meeting on Wednesday morning President Miller reviewed briefly the achievements of the society during the past year. "Our membership," he said, "is now over 13,000 and the membership committee tells us that we shall add from 2500 to 3000 new members next year. Our annual budget is now well over half a million dollars and likewise increasing. Through our connection with other bodies, notably the other national societies and their joint committees and bodies, such as the United Engineering Society, the Engineering Council, the American Engineering Standards Committee, the National Research Council and now the American Engineering Council, we have maintained a position of respect in our environment and we are looked to as an influence in the field of the engineering profession."

It was reported that nine new local sections were established by the society the past year: at Akron, Columbus, Portland, Ore., Pittsburgh, Providence, Syracuse, Toledo, Utica and Seattle, Wash., making a total now of 38 sections, an increase of 31 per cent in the number of sections in the year. Progress was also made on the formation of prospective sections at Day-

ton, Ohio, Bethlehem, Pa., Moline, Ill., Springfield, Mass., Youngstown, and Spokane, Wash. Seven of the ten professional sections authorized by the council of the society have been organized and sections on wood-working machinery and chemical engineering are now under consideration.

At this meeting, President Miller announced that the student prize, a certificate and check, had been awarded to Howard G. Allen, for a paper on "Wire Stitching Through Paper."

Membership of the nominating committee for 1921 was also announced as follows: Elmer Smith, turbine sales engineer, General Electric Co., Boston; G. K. Parsons, consulting engineer, 29 Pine street, New York; W. W. Varney, attorney at law, Baltimore; B. S. Hughes, vice president and chief engineer, Zaremba Co., Buffalo; W. M. White, manager and chief engineer hydraulic department, Allis-Chalmers Mfg. Co., Milwaukee; F. E. Bausch, manager, Hooven, Owens, Rentschler Co., St. Louis; E. O. Eastwood, professor of mechanical engineering, University of Washington, Seattle, Wash.

The report of a special committee on a code of ethics precipitated a lengthy discussion. The speakers were generally in accord with the spirit of the code as presented, but it was criticized because of its length and phraseology. It was finally referred back to the committee for revision with a suggestion that it be submitted to the Federated American Engineering Societies in order that a code might be formulated that could be adopted by all the engineering bodies. Proposed amendments to the constitution of the society including that admitting of juniors to privilege of voting and holding of office, because of lack of time, were deferred for action to an adjourned session, but this failing of a quorum, such amendments will have to be submitted at the spring meeting to get consideration at the annual meeting a year hence.

Bearing Metal Research

A printed progress report submitted by the research sub-committee on bearing metals, of which Christopher H. Bierbaum, vice-president Lumen Bearing Co., Buffalo, N. Y., is chairman, stated that "investigations had now been broadened to include both the non-ferrous and the ferrous alloys to such an extent that the committee now offered a tentative scale of micro-hardness, also our instrument, 'the microcharacter,' has also been further improved and refined." It was explained that the only means for the study of the microcharacteristics of alloys until now, has been the needle point, and "when this is compared with the finest of the sapphire points, which have been successfully ground for our latest instrument, the contrast becomes striking." A photomicrograph showed the end of a microcut in soft steel with a sapphire point under magnification at 2000 diameters while another photomicrograph showed under exactly the same magnification the shadowgraph of the point of the finest cambric needle. "A comparison of the two," stated the report, "shows that a refinement of at least a thousand-fold has been effected. In addition, the hardness of the sapphire as compared with steel offers a means for testing the hardness of the individual crystals of which the steel needle is composed. The fact that these sapphire points have been accurately ground and mounted according to definite specifications and can now be perfectly duplicated makes it possible to supply various investigators with a standard instrument for doing our work in a manner that permits direct comparison of results. A large part of the work done by the committee up to the present time has been that necessary for

the perfecting of the microcharacter and the preparation of a proposed hardness scale."

Ordnance Section Organized

On Thursday afternoon, Dec. 9, about 30 men, most of whom were active in the ordnance program of the World War, met to organize an ordnance section. Col. C. F. Hirshfeld, chief of the research department of the Detroit Edison Co., chairman of the meeting, appointed the following committee to nominate officers for the section and to prepare a letter ballot: Major F. C. Bull, claims board, New York Ordnance District, chairman; Frederic E. Town, Otis Elevator Co., New York, and Ralph G. Macy, construction engineer, Walter Kidde & Co., New York.

The meeting was thrown open to discussion of what such a section might accomplish. Major Bull interpreted the function of the section as salvaging the knowledge which engineers and manufacturers of ordnance materials had gained in their experiences in ordnance production in the war. A number of the men, who were connected with ordnance program in one way or another during the war and are now back in engineering work, related their experiences. Major Frank B. Gilbreth, Frank B. Gilbreth, Inc., Montclair, N. J., was one of those to emphasize the value of making use of the knowledge which these men and many other engineers have gained, applying it to engineering problems and having it ready for any emergency.

Col. C. L. H. Ruggles, chief of technical staff of the Ordnance Department, pointed out that while the Ordnance Department is small and army engineers few in number they are able to handle the technical problems confronting them but need the support of the engineering societies of the country to secure quantity production of ordnance materials.

Col. James L. Walsh, of Washington, representing the Army Ordnance Association, offered the co-operation of the association with its 3800 members in carrying out any program which the ordnance section may undertake. He urged the closest connection between the two bodies and expressed the opinion that they would work together to attain splendid results.

The general feeling of the meeting was that the new section should be the liaison between technical engineers and manufacturers of ordnance materials, and that it should work toward educating the members of the society and through its members the general public as to what are the ordnance requirements in manufacture of materials and carrying out its program.

Transportation and Fuel Problems Discussed

The dismantling of branch lines of railroads all over the country where hard surfaced roads exist and both freight and passenger traffic could be hauled by motor trucks and buses was advocated by Charles A. Morse, chief engineer Chicago, Rock Island & Pacific Railroad, at the transportation session. Mr. Morse dwelt upon the duplication of facilities, often needless, which proved expensive to the railroads, and said the charges for such duplication eventually were a tax on the public. In many sections, he said, branch lines, built originally along soft dirt roads, now paralleled gravel surfaced roads, on which automobiles could make about as good speed as trains. He urged a listing of dispensable branch lines on all railroads and a five to seven year program of eliminating them.

Other speakers were Daniel Willard, president of the Baltimore & Ohio Railroad; former Brig. Gen. Frank T. Hines, vice president Baltic Steamship Corporation, who reviewed the Government's efforts in connection with inland waterways transportation; Francis W. Davis, engineer Pierce-Arrow Motor Car Co.; Col. William Barclay Parsons, consulting engineer, New York, who discussed the terminal problem, and Gustav Lindenthal, consulting engineer, New York, who discussed the New York terminal problem.

The need for a definite policy as regards fuel conservation and its possible means of accomplishment were discussed by the speakers at the fuel session. Nearly 100,000,000 tons of coal could be saved annually in this country by extending many of the war conservation methods, stated David Moffat Myers, consulting

engineer, New York, who was a member of the United States Fuel Administration during the war. Mr. Myers said that if only 75,000,000 tons of coal were saved each year, the money saving would be \$450,000,000 or enough to pay nearly one-half the interest of the national war debt. The main wastage, the speaker said, could be found in boiler plants, coke ovens, domestic heating equipments and plants and installations misusing steam after its generation. Eleven proposals for effecting economies were proposed by Mr. Myers. Among these were education on fuel conservation, a system of zoning of fuel shipments, better means of coal storage at the mines, appointment of a resident engineer in each state to keep in close touch with local industries, correct design of power plants and the development of low temperature distillation of coal and lignite. What we need, he said, is to develop a flexible plan of co-operation between the central power stations and the privately owned plant. In the case of the private plants producing a surplus amount of exhaust steam, more power might easily be generated and sold to the central-station system. Fuel conservation, the speaker stated, can never be satisfied by development of the central-power-plant idea alone; the privately owned plant is essential to economy.

The distillation of fuels as applied to coal and lignite was further discussed by O. P. Hood, U. S. Bureau of Mines, who stated that in lignite areas of the United States where there are large supplies of low grade fuel and Eastern coals are obtained with difficulty, experimental work has shown the possibility of applying distillation methods to this fuel, obtaining gas, tar, ammonium sulphate and a carbonized residue of excellent heating value.

One of the speakers, Reginald P. Bolton, president R. P. Bolton Co., New York, stated that he had proposed to Mayor Hylan, New York, a plan to bring coal to the city from the anthracite regions in Pennsylvania by forcing it through two 14-in. pipes with water pressure. It was explained that there is a fall between Scranton, about 130 miles west, and New York of about 2000 ft., and that coal and water in the proportion of 50 per cent each would travel at the rate of 7 ft. a second. The two pipes, Mr. Bolton explained, would bring to the city 7,000,000 tons of coal a year, enough to supply the needs of the 5,500,000 population and enough besides to supply communities through which the pipes were laid. The pipes, he said, could be laid on top of the ground, as there would be no danger of freezing. Asked concerning the cost of the proposed pipe lines, Mr. Bolton said that it would be small compared with the total cost which the people had to pay for coal transportation as freight.

Side-Cutting of Thread-Milling Hobs

Side-cutting of thread-milling hobs was discussed by Earle Buckingham, engineer of standards, Pratt & Whitney Co., at the machine shop session. The paper pointed out the corrections in the form of thread-milling hobs which can be readily made and also produce threads sufficiently correct as to form for all practical purposes. The speaker showed that the profile of the thread cut with a hob is a combination of two distinct curves. First, a small fillet is formed at the root of the thread which is the path of the outside corner of the hob; no correction in the form of the hob is possible to correct this point. Second, the larger part of the flank of the thread consists of a slightly curved profile which is formed by the overlapping paths of the infinite number of cutting points which form the cutting edge of the hob.

Mathematically, it was shown, a curved correction can be applied to the form of the hob which will correct this profile entirely, but practically, a straight-line correction can be applied which is almost exact, as the amount of the actual curvature on the flanks of the thread is seldom greater than one-tenth of a thousandth part of one inch. It was further shown that the greater the angle of the helix of the thread, the greater the amount of correction necessary. An interesting point brought out, was that the diameter of the hob has no effect on the form of the main part of the profile; the actual amount of side-cutting is more and

the height of the fillet at the root of the thread is greater, as the diameter of the hob is increased, but the rest of the profile is unchanged. The paper dealt with both externally and internally threaded parts, and it was shown that the general conditions of side-cutting are identical in both cases; on a screw, however, the flanks of the hobbled thread will be convex, while in a nut they will be concave; furthermore the height of the fillet at the root of the thread and the actual amount of side-cutting are relatively greater in a nut than on a screw.

Cylindrical Grinding

A study of the laws involved in cylindrical grinding and an analysis of grinding action for draw-in cuts and for traversed cuts was given by W. H. Chapman, engineer, Detroit, in a paper, "Cylindrical Grinding in 1920." By calculating values for wheel-wear for different conditions and comparing them with production figures calculated under the same conditions, Mr. Chapman showed that a proper selection of wheels may be made. "Greatest grinding efficiency," it was concluded, "is obtained by the use of the softest wheels suited to the nature of the material ground. This efficiency is dependent upon the control of the dimension and speed relations between the wheel and the work so that the individual chip may have the minimum depth for a given volume determined by the maximum allowable radial depth of cut. This means long arc of contact, low work speeds and maximum feeds. With the above conditions established increase of traverse speed increases production without increase of wheel-wearing action."

Considering production costs Mr. Chapman said that "If wheel wear were the most important element of production cost, grinding efficiency might be considered on this basis without leading to the fallacy which exists today. As a matter of fact, the wheel cost is almost negligible compared to the other costs, and wheel selection should be based upon the production capacity of the wheel under the given set of grinding conditions, allowing the wheel wear to be as high as is necessary to get a free action without excessive wear (which would cause difficulty in sizing work and the need for frequent dressing). The all-important factor is the rate at which the wheel may be made to cut and still not get out of truth. This affects the grinding time, any reduction of which is of vastly more importance than an increase of wheel wear which may result from such a reduction. In good practice the volume of wheel wear is approximately a tenth of the material removed (mild steel) during roughing operations." Assuming wheel cost to be for example, 7 cents per cu. in. and other production costs 5 cents per min., it was shown that production efficiency is materially increased by increasing production at the expense of wheel wear within certain limits. The speaker concluded with a discussion of production costs on this basis and with a series of practical conclusions, which pointed out a number of individual factors, any one of which may serve to entirely or partially impair a successful operation of the machines in following theoretical fundamental laws as deduced.

Varied Topics Discussed

A paper on foundations for machinery by N. W. Akimoff, manufacturer of balancing machinery, Philadelphia, was presented at the session on design. This paper will be given largely in full in a later issue. Briefly the system requires the anchoring of one point of the foundation at a steady point, selected as far as possible from the center of gravity of the system, the other end being mounted on springs, with tension so adjusted that the two oscillation periods, one occurring in the vertical plane and the other in the horizontal plane, will be well out of the limits of the operative speeds. Considerable discussion resulted centering chiefly about possible applications of the system, such as isolating a building from exterior vibration, eliminating transmission of vibration to a delicate apparatus in a building, and applications to automobiles, aeroplanes, and motor boats. The system, it was stated, has been successfully applied to elimination of vibra-

tion in the automobile chassis, and applications to the aeroplane and motor boat are now under study.

An interesting paper illustrated with numerous lantern slides showing developments in mechanical engraving and die sinking was presented by J. F. Keller, Keller Mechanical Engraving Co., New York. A large field of usefulness for the machine was shown to be where dies of the same pattern but of different sizes were desired. An interesting application of the machine was that of the manufacture of two propeller blades for an aeroplane at one time from the original templet. The size of die that could be cut, Mr. Keller stated, was limited only by the capacity of the cutter, as the machines could be built of any size desired.

Other papers presented included "Rational Design of Hoisting Drums," by E. O. Waters, assistant professor of machine design, Yale University; "The Constitution and Properties of Boiler Tubes," by Albert E. White; "Experiences with Large Center Crank Shafts," by Louis Illmer, Southwark Foundry Machine Co., Philadelphia; "Design of Flywheels Connected to Synchronous Generators or Motors," by R. E. Dougherty and R. F. Franklin, General Electric Co., Schenectady, N. Y.; "Principles of the Gyro Compass," by George B. Crouse, and "The Armor-Plate and Gun-Forging Plant of the U. S. Navy Department at South Charleston, W. Va." by Roger M. Freeman. This latter paper, largely in full, was printed part in THE IRON AGE, issue of Dec. 2, and is concluded in this issue.

December Meeting of New England Foundrymen

F. J. Ryan, president American Metallurgical Corporation, Philadelphia, gave an illustrated talk on the "Future of Electric Heat as Applied to the Iron, Brass and Steel Foundry," before members of the New England Foundrymen's Association at the December meeting held at the Exchange Club, Boston, on the evening of Dec. 8. He stated the time is comparatively near when those metal melting industries depending on coal for heating purposes will not be able to compete with those operating electric furnaces unless there is a marked reduction in the cost of coal and much greater efficiency on the part of transportation companies. A recent investigation showed, he said, that the chances of industry having electric power delivered to it are 60 per cent as against 40 per cent in the case of coal. He feels that the solution of our transportation problem lies in cutting down the tonnage of basic materials hauled. According to Mr. Ryan, the installation of the electric furnace has been and is largely governed by standardization, but in a few years engineers will be able to adapt the furnace to the particular needs of each individual plant.

A. B. Root, Jr., president, presided at the meeting. George P. Aborn, manager Blake & Knowles Works, Worthington Pump & Machinery Corporation, was made chairman of the nominating committee for association officers to be elected at the annual meeting in January. Applications for membership presented by the S. M. Howes Co., Boston, stoves, ranges, etc., and David M. Howell, Lauria Bros. & Co., Inc., Boston, old materials, were favorably acted upon.

Work on a new blast furnace being erected by the Carnegie Steel Co. at the Farrell, Pa., works is being pushed and the stack will be completed early in 1921. It represents an investment of \$600,000.

The Republic Iron & Steel Co. is operating but one of its three blast furnaces in the South, the second unit having been recently suspended.

Weekly production record of the blooming mill of the Carnegie Steel Co. at the Farrell, Pa., works was broken for the second time within a month, for the period ending Dec. 10.

The American Society of Safety Engineers will hold a meeting at the Engineering Societies Building, New York, Friday evening, Dec. 17, on "Fire Protection from the Safety to Life Point of View."

NAVY ARMOR PLATE PLANT

Progress at Charleston Plant Described in Annual Report for Navy Department

WASHINGTON, Dec. 14.—“The erection of the Naval Ordnance Plant at Charleston, W. Va., gives the Navy one of the most complete establishments in existence for the production of armor plate, gun forgings, and projectiles, and, furthermore, removes the possibility that in the future any monopoly can dictate to the Navy the price it shall pay for armor and shells,” says Secretary Daniels, in his annual report of the activities of the Navy Department. Then he devotes a considerable section of the report to a survey of the history and progress of the Charleston Plant, which has been described in technical detail in recent issues of *THE IRON AGE*.

“Established after years of discussion and consideration,” declares the report, “this great plant exemplifies the policy that the Government shall not be dependent upon private concerns to which profits must be the first consideration, but shall be able to manufacture in its own plants sufficient armor and munitions to supply a large part of its needs. The saving in production at cost and the determining by actual experience the prices the Navy should pay for such products when secured from private contractors would alone amply justify such an establishment, resulting in the saving of millions of dollars. But only less important is the ability to conduct constant experiments in improvement of armor and projectiles, and to retain such improvements for the exclusive use of our own Government.”

“The projectile plant, which was put in operation in 1919, is producing armor-piercing shells which have satisfactorily met every test. We have also succeeded in meeting the high specifications for air flasks, which the Navy has heretofore been able to obtain only from private manufacturers. This shows that our methods have proven entirely successful.”

“The Naval Ordnance Plant is furnishing 6-in. 53-caliber gun forgings in increasing numbers to the naval gun factory at Washington, and it is expected that these two plants will take care of practically all the 6-in. gun construction for the Navy. The Charleston Plant has also furnished a number of 16-in. breech-mechanism forgings for 16-in. guns.”

The Armor Plate Plant

“Very satisfactory progress has been made in the erection of equipment for the armor plate plant, and it is expected that the first heat of steel will be tapped during the present month. Twenty-five large heating furnaces for the manufacture of large-caliber gun forgings and armor plate, two 65-ton open-hearth furnaces, and two 30-ton Heroult electrical furnaces for refining steel are in course of construction and approaching completion. A 14,000-ton press for forging and blending of armor plate and gun forgings is in course of manufacture. A boiler plant of 6500 hp., high-pressure pumping equipment, etc., has been obtained by transfer from the War Department. Construction work in the south unit, which comprises the armor and gun-forging plant, has been proceeding steadily, despite the acute labor shortage and the delay in the receipt of structural materials, due to the general unsettled industrial and railroad conditions.”

“In general the major items of construction work are fast being completed, and the beginning of operations is in sight. The superstructure of the open-hearth building is complete and the furnaces are being installed. Erection of the 60-ton open-hearth furnaces and the 30-ton Heroult electric furnaces is so far advanced that first heat of steel will be tapped within a few weeks. The superstructure of the forge and furnace building is substantially complete. Foundation work for the 14,000-ton press is under way and that on the 25 furnaces is 75 per cent complete. Erection of furnaces is well advanced. The forge shop should be in operation by the beginning of 1921, the exact time depending on the delivery of the press and press-driving equipment. The superstructure of the

machine shop has been completed, and foundations for the heavy machine tools will soon be ready. Four 75-ton cranes have been erected and are being used in the placing and erection of machine tools.

Gun Treatment Building

“The gun treatment building superstructure has been held up pending the completion of the big gun pit. Excavation has been finished and 70 per cent of the concreting of the pit done. Excavation foundation work for the main substation is substantially done but the work on the superstructure and installation of the electrical equipment is held up by delay in receipt of structural steel. The boiler plant is being rapidly completed and work is proceeding on the water supply and sewerage systems. Excavation for the pump house has been completed and the concrete work is under way. Three buildings which will be used for general storage, pattern-making, blacksmith shop and maintenance shops, are in course of erection. Five officers' quarters have been built and are occupied. A track system for the yard has been installed, 6 miles of track having been built.

“Though considerable work of course remains to be done, this huge armor-plate plant will soon be in operation, and will be completed in the near future.”

“With the armor-plate factory and projectile plant at Charleston, the naval gun factory at Washington, the naval powder factory at Indian Head, Md.; the torpedo stations at Newport, R. I., and Alexandria, Va., the Navy is equipped to produce a large proportion of the guns and shells, armor plate, powder and torpedoes it requires. The extensions made during and since the war period have largely increased their capacity.”

“Completion of the brass foundry at the naval gun factory provides for the manufacture there of castings, ingots, etc., from non-ferrous metals. A new water system has been installed, including fire protection for Bellevue magazine. The railway extension of the wharf is in operation and about one-third of the 350-foot wharf has been completed.”

Production of Charleston Plant

WASHINGTON, Dec. 14.—Rear Admiral Charles B. McVay, Chief of the Ordnance Bureau, in his annual report gives the following statistics of production at the Charleston plant:

“In the cold-metal department production on job orders amounted to over 3,000,000 lb., while castings and forgings machined for plant equipment amounted to nearly 1,500,000 lb. In the hot-metal department 5975 gross tons of steel ingots, 291 tons of steel castings, 465 tons of iron castings and 200 tons of brass castings were produced, while 4644 tons of ingot stock were forged, 4282 tons of forgings were annealed and 2582 tons of forgings were heat-treated. The north unit of the naval ordnance plant, originally called the projectile plant, has been working in the hot metal shops practically 100 per cent during the past year, melting, forging and heat-treating the following: Six-in. 53-caliber gun forgings; 21-in. torpedo air flasks, 16-in. counter-recoil cylinders; 16-in. armor-piercing projectiles. It has also produced during the past year miscellaneous gun forgings required by the Navy Department. The iron and brass foundry made all the castings required for the maintenance of the rest of the plant as well as the new equipment for the armor-plate plant.”

The Circle Stamping & Mfg. Co., 241-243 Cortland Street, Belleville, N. J., manufacturer of plate washers and general stamping work, has taken over the building recently vacated by the American Perforated Metal Co., 245 Cortland Street, Belleville, which it will operate. This new acquisition will give 100 per cent more working space.

The Christmas party of the Pittsburgh section of the Association of Iron Steel and Electrical Engineers will be held Thursday evening, Dec. 16, at Hotel Chatham, Pittsburgh.

Pertaining to the Business Depression

Present State of Operations and Views of
the Future of 139 Well Established Manu-
facturing Companies in Eighteen States

BY HAROLD A. RUSSELL*

IN the latter part of last month, November, the writer sent out several hundred copies of a letter of inquiry as to business conditions existing in varied lines, both manufacturing and jobbing. The inquiry was not sent to customers of the firm with which the writer is employed but to firms with whom the writer has placed many purchase orders during the past decade. The inquiry as sent out follows:

We are going to ask you to let us have a frank statement as to conditions existing in your own line, and your opinion of the future. Presuming that you find business quiet at the present time, would like to know about when you expect your line to start up again. How do you find collections? Is there any section of the country that is showing indications of good business in your line, or is there any particular section that is showing poorer collections than other sections? Will be pleased to have you write us frankly as to how you size up the existing period of depression. Any information you can give us will be treated confidentially.

As the answers were to be treated confidentially, no names or places can be mentioned. All of the firms written to are well rated and many of them stand high in their line. Quite a number of them

*York, Pa.

passed through the panic of 1893 and practically all of them were in existence a number of years before the outbreak of the World War, so the answers were based on mature judgment.

The letter of inquiry also gave a frank statement of conditions existing here and the effects that had been felt by and through conditions existing elsewhere. This letter was sent to a number of cities and towns in the following States, namely:

Connecticut
Delaware
Georgia
Illinois
Indiana
Iowa
Massachusetts
Maryland
Michigan

Missouri
Ohio
Pennsylvania
New Jersey
New York
Rhode Island
Tennessee
Virginia
Wisconsin

A table was made of all the answers and is here reproduced. This table is self-explanatory but a few remarks may be in line.

Of the 139 answers received and analyzed, 56 were from firms doing only domestic business and the remaining 83 from those doing both domestic and export business. The answers were divided into thirty groups, as shown in first column. It will be found that in all instances the totals in the various columns do not equal the number of replies received. This is because some of the answers did not refer to certain subjects. A few of the replies

Line Manufactured or Sold	Domestic business only	Domestic and Export	Operating Time per Week				Number of Employees as compared with Normal					Opinion as to Cause of Depression			
			Normal	5 Days	4 Days or less	Partly Operating	100 per cent.	Reduced 20 per cent.	Reduced 30 per cent.	Reduced 50 per cent.	Wanted Out	Automobiles	Exchange	Deflation	Profiteering
Bearings, Ball and Roller.....	1	1	1	1			1				1	1	1	1	
Belting, Leather and Rubber.....	12	1	1		2		1				1	1	3	3	
Bolts, Nuts, Rivets and Screw Machine Products Chain.....	12	12	1	1			2				1	1			
Copper and other Pig Metals.....	1		1	1			1				1		2	1	1
Dies, Taps, Twist Drills.....	3	2	1	3		1	2		1		3	2	1	2	
Emery Wheels.....	2	2	1	1			1				1		2	1	
Farm Implements and Allied Lines.....	1	2	3		1		1				3		2	1	
Fire Brick and Clay.....	2	1	1	1			1				1			2	
Glue.....	2	1	1	1			2							2	
Jacks, Wagon, Etc.....	1					1					1	1	3		
Machinery, Iron Working.....		11	5	4	1	1	5		1		3	1	1	4	1
Machinery, Wood Working.....		3	2	1							1	1	1		1
Paints.....	1	2	2				2				3	1		1	1
Pig Iron and Coke.....		3				2					2	1		1	
Plumbing Fixtures and Supplies.....	1					1					1		1	1	1
Pumps.....		2	2		1		2								
Saws and Saw Mill Equipment.....	1	3	1	2	1		1				3	2	2	1	
Springs.....	3		1	1	1		1		1		1	1	2	1	
Stampings and Drop Forgings.....	6	2	2	2	4		1		1	1	4	3	2	1	1
Steel Castings and Hammered Forgings.....	2		1		1						2		2	1	1
Steel Mills and Warehouses.....	6	9	6	3	3	3	4		1	1	8	2	2	3	
Supplies, Factory and Mill.....	2	5	5	2			3	1			3		2	1	
Supplies, Office.....	1	4	4	1			4				1		1	2	
Transmission, Power.....		2	1	1	1						1		1	1	
Valves and Fittings.....	1	8	4	4	1		3	2			4		2	4	1
Wire Netting.....	1		1				1								
Wire Rope.....		2	2				1				1		1	1	
Wheels, Wagon, Etc.....		1				1							1	1	
Miscellaneous.....	16	8	9	5	4	3	5	4	2		9	2	6	5	2
	56	83	64	37	20	14	50	10	5	2	59	18	34	43	8

NOTE: Four plants reported a decrease in wages. One in stampings and drop forgings has reduced wages 2 per cent, the one in valves and fittings, 15 per cent, and two of the miscellaneous group reported wage reductions without naming the amount.

The West and Middle West were named as the sections of the country showing a fair amount of business. One chain manufacturer and 3 making office supplies give the Middle West as the section; while these name the West: 1 bearing manufacturer, 2 of those in firebrick and clay, 3 in metal-working machinery, 1 making saws and 4 of the miscellaneous group.

indicated that no effects of the depression had as yet been noted.

Under the heading, "Opinion as to cause of depression," will be noted first, "Automobiles." The consensus of opinion seemed to be that too many pleasure cars had been produced within too short a period. That too much money had been expended for them by a class which probably could use the money to better advantage. In other words, the momentum gathered by this industry in its efforts to supply the demand which undoubtedly did exist for a period was so great and far reaching that the attempt to check it was felt in all allied lines, from raw materials to finished parts.

Under the heading "Rate of Exchange," which had almost twice as many adherents, the answers indicated that as many firms doing domestic business were affected as those doing both domestic and export. This seems logical because the exporting firm would certainly cut down its purchases of both material and equipment, when it was unable to ship its product in normal volume.

"Deflation" had almost as many backers as the first two combined. A total of forty-three as against a combined total of fifty-two. Many under this heading seemed to feel that the present condition is a natural one, brought about by the need of returning to a more sensible basis. And in nearly all instances the replies indicated that business would be on a firmer foundation after deflation had run its course.

When Will Business Be Normal?

The opinions expressed as to when business will pick up again seemed to center on or about March 1, 1921. One or two postponed the time to the latter part of 1921. It will be noted that a number had the same idea in mind as was mentioned under "Deflation," namely, that business would resume when a trading basis was reached, or, in other

words, when the manufacturer, the dealer and the consumer felt that the price asked was fair to both sides.

In the letters received many paragraphs stand out prominently. It is not possible to quote all of them but the following will reveal the expectations for business revival:

A. We look for an adjustment of domestic business not later than the middle of February. All that the buying public wishes to be assured of is the fact that they are buying at as low a rate as is consistent with the times. The country cannot stand idle for any length of time; it must progress and it is my opinion that an era of stable prosperity will return to us even quicker than we surmised and with added force to make up for the period of depression that is now on us.

B. We do not look for a continued slackness in business. We believe that there will be an improvement after the first of the year, and it is our opinion that the improvement will continue gradually until things become normal.

C. Readjustment of prices in several commodities, as well as labor, is going on in an orderly manner and while it will take four or five years to complete the deflation process, there will, of course, be temporary rallies, and it is one of these rallies that we look for in January, 1921, which we believe will continue during the coming year.

D. The thought seems to prevail in everyone's mind that in the early part of next year the demand will open up and gradually grow until, probably before the first half of the year is over, conditions will be stimulated to a good, healthy condition, when there will be sufficiently keen competition in selling to keep all manufacturers on the alert and to get their goods and their prices right.

Optimism Versus Pessimism

One hundred and eleven answers revealed an optimistic tone. Twenty-eight were the reverse.

			Opinion as to when business will move along in normal manner					Tone of letter		Collections				Conditions as reflected by actual orders entered			Immediate future prospects		
Tax Laws	Political	Financial	Jan. 1	Feb. 1	March 1	July 1	When basis for trading is reached	Optimistic	Pessimistic	Good	Fair	Slow	Poor	Good	Fair	Poor	Good	Fair	Poor
					1	1	1	2	1	1	1	1		1	1	1		2	1
		1	2	1	4	1	1	2	1	1	2	3	2	4	2	2	1	4	3
			1				1	3	4	1	5			1	2	3	1	1	2
				1	2		1	3	3	1	2	1		1	1	1	1	3	2
		1			5	1		10	1	1	4	1	2	2	1	1	1	6	4
		1			1		1	2	1	2	2	3	1	2	2	3	2	2	1
					1		1	3	1	1	3	1		1	1	2	3	1	1
				1	1		1	2	4	2	2	2		2		2	1	2	
1	1			1	3		2	7	1	3	5	1		1	3	4	3	4	1
			2		4	1	5	10	5	3	6	1		2	3	10	3	3	6
			2		3		1	4	3		3	2	1	1	4	1	1	3	1
				1	1		1	2	8	1	5	1	1	1	1	1	1	7	2
1			1		4		1	1	2		1	1		2			1	1	
1		1	2	4	3	1	2	19	5	4	6	8	4	4	5	4	3	9	2
3	1	4	10	12	42	8	26	111	28	13	62	45	11	26	41	58	9	69	33

The South and Middle West are named as the sections of the country showing the poorest collections. The South is put first by a chain maker, by a manufacturer of farm implements, by a manufacturer of glue, by a manufacturer of pumps, by 3 of the saw manufacturers, by 3 of the steel mill and warehouse group, by 2 of the factory and mill supply group, by 2 of the office supply group, by 3 making valves and fittings and by 6 of the miscellaneous group. The Middle West is named by a bearing maker, by a maker of taps, dies and drills, by 2 emery wheel makers and by 2 in stamping and drop forging lines.

Rather a large percentage but the analysis seemed to indicate that a majority of those possessing long-range vision were optimistic, while quite a number of those who sized up the condition as it is were pessimistic. And the condition as it is must be faced, for most certainly we had to come down off the stilts some time. Maybe we are falling down rather than stepping down, and in doing so we may receive a few bruises, but it would seem that as soon as we land we shall be on a firm foundation again. And on that foundation we will start to build up again a more stable business structure than we have had for the past few years of delusive prosperity. Since the war came to an end we

have read and we have said that the condition existing to-day was what we expected. Let us remember that there is a tremendous backed-up demand for railroad equipment and for homes. If moderate priced clothing, shoes, furniture and the like were offered the buying public to-day the writer believes the producers would be running their factories full time and full force, but in order to arrive at this basis of trading, in these lines and in all others, lower wage scales are required.

Many of the answers received expressed the belief that lowered wage scales were absolutely essential before continued prosperity could be maintained.

CAUSES OF DEPRESSION

Business Conditions Considered at Meeting of Chicago Machine Tool Dealers' Association

"I am an optimist," said J. W. Thomas, vice-president Great Lakes Trust & Savings Bank, Chicago, in discussing the business situation at a dinner given by the Chicago Machine Tool Dealers' Association, at the Machinery Club, Chicago, on Dec. 10. The present difficulties in this country, the speaker asserted, are traceable not to a reduction in the wealth of the country, or its productive capacity, but to a shrinkage of its working capital. If a corporation operates on the basis of a ratio of \$700,000 in fixed assets to \$300,000 in working capital and adds to its permanent investment to the extent of \$100,000, thereby changing the ratio to \$800,000 to \$200,000, it is bound to encounter serious trouble in the conduct of its business. That is what has happened to this country, said Mr. Thomas.

In discussing other factors contributing to the situation, Mr. Thomas stated that there is a breaking strain in retail prices of commodities just as certainly as there is a breaking point in steel, no matter how much costs seem to justify a further price advance. This breaking point has been reached and there has been a 90 per cent collapse in retail sales. When buyers found it difficult to secure goods, owing to strikes and railroad difficulties, they not only bid up prices, but ordered several times as much as they actually needed in the hope that they would thereby secure full stocks.

Notwithstanding the difficulties of the present situation, Mr. Thomas is of the opinion that a few months will see conditions on the mend. Before a favorable turn for the better can take place, however, one weed must be pulled out of the business soil of this country and that is the obsession that the profits of the past few years can be exacted in the future. The old days of a standard percentage of profit for different commodities—varying according to the risk involved—will have to return. The seller will be forced to abandon the attitude of mind which placed no limit on prices except how much the traffic would stand. At the conclusion of his remarks, Mr. Thomas digressed from his general subject for a few minutes to discuss the tax situation. One of the objections to the excess profits tax, he stated, was that it proved a strain on the liquid capital of corporations. It was unnecessary, however, to debate the merits of the tax, because it carries its own cure. The returns for this year, Mr. Thomas stated, will be very much less than those for 1919 with the result that the Government will have to make new arrangements to secure revenues.

Conditional Contracts of Sale

An address by S. J. Whitlock, manager Belding Brothers, Chicago, and ex-president of the National Association of Credit Men, was of particular interest to machine tool dealers who are familiar with the difficulties connected with chattel mortgages. Mr. Whitlock outlined the efforts which have been made to pass uniform laws throughout the country covering conditional contracts of sale. He stated that there is a common

misapprehension as to the amount of business and the class of business which is transacted on the basis of this legal instrument. To the ordinary layman the conditional contract calls to mind furniture houses which sell goods on instalment plan and the minute that there is a lapse in payments back up their wagons and take the property. On the contrary, the conditional contract of sale is an important and rapidly growing factor in American business. As far back as four years ago, an annual business amounting to over \$10,000,000,000 was transacted on that basis. Thus far, five states have adopted uniform laws governing conditional sales contracts, Mr. Whitlock said, and it is hoped that the time will come when the remaining states will adopt the same legislation. Through the conditional contract, the business man secures all of the advantages obtained through a chattel mortgage without being burdened with the expense and red tape involved in using the latter instrument. Obviously, a uniform conditional contract of sale in all of the states will further simplify the problem of the sellers.

Organization of Trumbull-Cliffs Furnace Co. Completed

Organization of the Trumbull-Cliffs Furnace Co., formed by the Trumbull Steel Co., Warren, Ohio, and the Cleveland-Cliffs Iron Co., Cleveland, has been perfected by the election of W. G. Mather, Cleveland, as president, and Jonathan Warner, Youngstown, as vice-president. Directors will be the members of the boards of the two concerns, 11 in all. The Trumbull-Cliffs Furnace Co. will have a capital of 100,000 shares of non-par value common stock and 45,000 shares of \$100 par value, 8 per cent preferred. The common will be jointly owned by the constituent companies, while the Cleveland-Cliffs Iron Co. has underwritten 40,000 shares of the preferred. Holders of Cleveland-Cliffs Iron Co. stock may subscribe for the Trumbull-Cliffs preferred at the rate of two shares for each of the five owned in the constituent.

The Trumbull-Cliffs Furnace Co. is erecting a 600-ton blast furnace on property adjoining the open-hearth department of the Trumbull Steel Co. It is the expectation that the stack will be completed next June. Most of the output will be taken by the Trumbull company, while any surplus will be marketed by the Cleveland-Cliffs Iron Co. The Trumbull Steel Co. has an annual capacity of 2,500,000 base boxes of tin plate, 100,000 tons of sheets and 100,000 tons of strip steel. Strip steel rolling equipment now being installed will double the capacity for such material and will give the company a total capacity of 400,000 tons of finished products yearly.

The Hancock Steel Co., a West Virginia corporation with a capital stock of \$500,000, desires the services of a company which can do the engineering, planning and equipping of a complete foundry and machinery department, with all modern devices. F. Vernon Aler, general counsel for the company, Martinsburg, W. Va., is authorized to conduct negotiations to this end.

Move to Socialize German Coal Mines

Iron and Steel Manufacturers Apprehensive Over the Outcome—More Concentration in the Steel Trade—Prices Fixed to March 1

(Special Correspondence)

BERLIN, GERMANY, Nov. 22.—The iron trade continues to center its interest around questions of socialization and consolidation of companies. Some weeks ago the National Economic Council—a sort of advisory body of over 300 members, organized several months ago for the purpose of discussing and giving advice to the Government on all business legislation—appointed a sub-committee to draw up recommendations for socializing the coal industry. That committee has been holding sittings in Essen in conjunction with a similar committee of the National Coal Council, but it has not succeeded in making a unanimous report. Additional members have been appointed to it by the Economic Council, with the hope of getting a more favorable result.

Proposal of Coal and Iron Leaders

The sub-committee voted by a very large majority for a plan proposed by the three great coal and iron men—Stinnes, Vöglér and Silverberg. This proposal, with strong socialistic features, provided for three things: (1) A geographical grouping of coal fields, along with a consolidation of the smaller and the largely worked-out fields; (2) the issuance of small shares of 100 marks, so as to enable miners and small capitalists to acquire owners' interests in the coal mines; and (3) to enhance production of coal by allowing the annexation of mines to other industries which use it in producing the most highly finished products. This latter recommendation is obviously designed to promote just such a "vertical concentration" of industries as is now proceeding on a grander scale than ever.

This report was signed by two of the labor members on the sub-committee, one of whom represents the Socialist and another the Catholic labor unions. Another Socialist member made a separate report demanding full socialization. The majority report has thrown the Socialist workingmen into a state of great excitement. The old National Association of Miners, a Socialist organization, passed sharp resolutions disavowing the favorable vote of its member; and very strong opposition was manifested throughout the Socialist press, the general tenor of which was that the Stinnes proposals were designed to fasten the capitalist system more firmly upon the country than ever; and the 100-mark shares were thrown out merely as a bait to catch the miners and induce them to co-operate in the process.

For Complete Socialization of Coal

Finally the Majority Socialists in the Reichstag brought in an interpellation asking the Government when it would redeem its promise to introduce a bill for the socialization of coal, and whether this would provide for full socialization not only of production but also of distribution. This interpellation, which was debated two days ago, brought out very sharp speeches from both wings of the Socialists, which amounted to a very serious warning to the Government not to commit itself to the majority report of the sub-committee, or indeed to attempt anything short of complete socialization. The Government's answer, made by the Economic Minister, Dr. Scholz, was non-committal and designed to play for time; its gist was that the decision of the enlarged sub-committee must be awaited before a bill can be presented.

Iron Trade Apprehensive

There the matter rests for the present; but it must be said that the situation does not promise smooth sailing for whatever measure the Government finally proposes. If it offers anything short of full socialization,

including the expropriation of mine-owners, it is certain that it will meet with the opposition of all the Socialist parties; and it is most doubtful whether it could withstand the storm. Its position is weak, as it is holding power only upon the sufferance of the Majority Socialist party.

The leading men of the coal and iron industries regard the prospect for any outcome half-way acceptable to them with unconcealed alarm. Most of them see little prospect for operating the coal industry by means of a great national board in such a way as to promote and cheapen production. In confirmation of their views they point to the brief experience they have already had with the National Coal Council, where the labor representatives have shown themselves more bent upon fighting capital than in reaching practical solutions of purely business questions.

More Concentration in Iron and Steel

Meanwhile the concentration process in the iron industry has made further headway. Last week the annexation of the Georgs-Marien Coal & Iron Co. of Osnabrück by the Lothringer Hütten und Bergwerksverein was announced. This denotes a victory of Peter Klöckner over Hugo Stinnes as the latter had tried for some time to acquire the property for his big "vertical amalgamation" plans. The Georgs-Marienhütte is a considerable concern, having a capital of 18,500,000 marks; it owns a coal mine, five blast furnaces, four Siemens-Martin furnaces, and rolling mills. It enters the Klöckner concern with a guarantee of equal distribution of earnings up to 8 per cent, beyond which it will receive 0.75 per cent to every 1 per cent for the Lothringer Verein.

After this consolidation the Klöckner group will have a total of 5,140,000 tons of coal allotments in the syndicate.

Another annexation, just announced, is that of the Köln-Neuessener Bergwerksverein by the Eisen und Stahlwerk Hoesch in the form of an 80-year pooling arrangement. The Neuessener company is one of the big coal producers of the Ruhr district. It increased its business several months ago by acquiring a two-thirds interest in the Trier coal mine, raising its capital at that time to 49,000,000 marks.

A Machine Tool Consolidation

The Schiess Maschinenfabrik of Duesseldorf, the largest builder of machine tools in the western industrial district, is also about to be absorbed by some other company, the name of which has not yet been disclosed. It is known, however, that a majority of its stock has been acquired by certain capitalists. It was guessed that the Gutehoffnungs-Hütte was the purchaser, but this appears not to be the case.

Later compilations show that the total capital strength of the Rhein-Elbe Union, after the absorption of the Bochumer Verein and the pooling arrangement with Siemens-Schuckert, will fall just short of 1,200,000,000 marks, including capital, reserves and bonds of the various companies. It has just been announced that Geheimrat Baare, for many years the leading director of Bochumer and one of the best known men in the German iron trade, will retire at the end of this year owing to old age.

Deep Cut in Export Bars—A French Car Order

During the past fortnight there has been an almost complete dearth of news about the business situation. Last week a further cut of export prices of bars to 150 gulden was announced, which denotes a big drop since two months ago. It is due to "sharp competition from abroad," which apparently refers to French and

Belgian competition. The puddled and wrought iron association has also announced reduced prices, corresponding to the reductions made in other products as mentioned in my last letter. Axles have also been reduced by 70 marks per metric cwt.

News by way of France mentions that the minister of public works has placed an order in Germany for 30,000 railroad cars, German shops having underbid those of France by 15,000 francs per car. The French have had less success with offers of Normandy ores in the Ruhr district. These were not accepted owing to the high prices demanded. It is mentioned in this connection that German works have a good prospect for obtaining ores from South America and other regions. The import of manganese ores from Brazil is expected to begin at an early date, and German capital is also represented in a new trading company which will import ores—presumably manganese—from Georgia (Circassia).

Steel Prices Hold to March 1

It is now announced that the Economic Minister has withdrawn his objections to the length of time adopted for the new iron and steel prices. Hence the prices will hold till the end of February. The minister

has also laid before the waste and scrap committees of the Iron Industry Union a draft of a decree for fixing maximum prices on old material. It appears that this decree was not designed for immediate issuance, but only to be held in readiness to be put into force at the necessary moment. The committees approved the draft, but they appointed sub-committees to confer with the minister before any final fixing of maximum prices. The minister's action was doubtless influenced by the rising tendency of prices registered latterly. The best grades now command close to 1000 marks.

The movement of coal in the Ruhr district has been further restricted by car shortage and low water in the Rhine. On some days the shortage exceeds 3000 cars, and stocks of coal are accumulating moderately at the mines at a time when many industrial plants are idle for lack of fuel.

The Rheinische Stahlwerke reports gross earnings of 50,000,000 marks for the past year, as compared with 8,000,000 marks. The dividend is 20 per cent against 6. The directors are not particularly pleased with these figures; they pronounce them "inflated and brilliant as a soap bubble." The net earnings of the Charlottenhütte amounted to 13,500,000 marks, against 4,000,000, and the dividend is 28 per cent against 12.

EIGHT-HOUR SHIFTS

Shorter Time Periods Adopted at Plants in the Youngstown District

YOUNGSTOWN, OHIO, Dec. 14.—Common labor has been put on an eight-hour basis at the plants of the Trumbull Steel Co. and the Falcon Steel Co. and extension of the eight-hour day is being considered by other independents. This action effects a sharp reduction in wages for common laborers, who now receive \$3.68 for eight hours, at the rate of 46 cents an hour, in comparison with \$5.06 for a ten-hour day, with 11 hours' pay and \$6.44 for a 12-hour day, at 14 hours' pay.

The Youngstown Sheet & Tube Co. has extended the eight-hour day to apply to its rod mill, 12-in. mill and galvanizing department. The employees of the blooming mill, Bessemer department, plate and wire mills are also on an eight-hour basis.

In the plate department, institution of the eight-hour day is a recent innovation.

It is stated, however, that the action reflects the current reduced volume of business and was taken to give as many men work as possible.

Reduction of working forces generally continues at a sharp rate and the number of men partially idle is greater than it has been in five years.

Since the first of the year, the Trumbull company has operated its open-hearth department on a three shift plan. When finishing mills are operating normally, the output of the open-hearth furnaces, after passing through the bloom and bar mills, is conveyed directly to the finishing mills, before it has had a chance to cool. At other times, however, the company has stocked bar tonnage and the bars have been reheated, of course, when sent to the rolls.

The instances cited above are practically the only ones in the Mahoning Valley where the shorter day has been recently introduced, though other interests have been considering the plan as an expedient at this time to afford employment to the largest number of workmen.

In the case of the Sheet & Tube company, a representative states that the introduction of the shorter day in the plate mill and wire departments has nothing to do with a possible ultimate adoption of the universal eight-hour day, but is merely the continuance of a policy to spread out the work in periods of business contraction.

Large November Payroll

November wage distribution of \$8,707,255 by the industries of Youngstown, Ohio, indicates that employment was being sustained, despite the slack in buying, as the payroll is the largest for any month this year.

For the first 11 months of 1920 the sum of \$86,385,906 was disbursed in wages, as compared with \$81,981,279 for 12 months in 1919 and \$84,393,686 in 1920. The November payroll exceeded that of October by \$200,480. Iron and steel interests are endeavoring to maintain employment as equitably as possible.

In the Field of Labor

The Connecticut Electric Steel Co., Hartford, Conn., has reduced wages of its employees 15 per cent and made a similar reduction in prices for its products.

The Lock Steel Chain Co., Bridgeport, Conn., has taken out group insurance to the amount of \$150,000, including death and total disability benefits, for its employees. The policy provides for a maximum insurance of \$1,500 after seven years' service.

Acting on orders received from Mayor Galvin, Cincinnati, police of that city prevented a meeting to have been addressed by Wm. D. Haywood, leader of the I. W. W. A crowd of people gathered to hear the speaker round the doors of the hall barred by the police.

Spring Meeting of American Electrochemical Society

Plans have already been made for the spring meeting of the American Electrochemical Society, to be held at the Hotel Chalfonte, Atlantic City, April 21 to 23, 1921. A special symposium on corrosion will occupy the morning and afternoon programs of one day which will bring out information on this subject up to date. For another session it is planned to hold a symposium on the electrolytic production of organic chemicals. Social features of the meeting will include a smoker and lecture on one evening and some moving pictures of appropriate electrochemical subjects followed by a dance on another evening. Dr. Carl Hering, Philadelphia, is chairman of the committee on arrangements.

Fifty years of business activity has been rounded out by R. K. Carter & Co., which does a business of buying for jobbers of hardware, iron, steel, machinery, mill and other supplies. The business of syndicate buying was established in 1870 by R. K. Carter, with hardware, iron, steel and mill supplies the original lines. The business was incorporated in 1900. The president is Alfred C. Greening, who joined the organization in 1893 to open its Pittsburgh office and who became president on the death of Mr. Carter in 1904. Frank R. Blauvelt is first vice-president; William B. Pauls-craft, formerly with the Hardware Buyers' Association, is second vice-president, and Benjamin F. Harrison, at one time with the American Axe & Tool Co., is treasurer.

CONTENTS

New Rolling Mill for Alloy Steels.....	1597
Five Stands Served by Tilting Table on One Side and Lifting Table on Other With Runout Over Transfer Table	
Navy Armor and Gun Forging Plant—II.....	1600
Design and Equipment of Forge and Furnace and Gun Treatment Buildings at South Charleston, W. Va.	
Closed Shop Principles Paramount.....	1606
Attitude and Policy of Labor Unions During War—False Philosophy of Gompers and Others	
Finds Efficiency Lacking in Many Shops.....	1609
Inspection of 70 Shops Reveals Large Percentage Has Only Partial or No System of Management	
Mechanical Engineers Meet in New York.....	1616
Transportation, Fuel and Power Popular Topics—Technical Sessions on Machine Shop, Design and Research	
Pertaining to Business Depression.....	1620
Present State of Operations and Views of the Future of 139 Manufacturing Companies in 18 States	
Move to Socialize German Coal Mines.....	1623
Iron and Steel Manufacturers Apprehensive Over Outcome—More Concentration in Steel Trade—Prices Fixed to March 1	
Pittsburgh Basing Case.....	1604
Steel Output in November.....	1604
Pulverized Coal in Blast Furnaces.....	1604
Taper Attachment for Boring Mills.....	1605
Liquid Fuel Regulating Valve.....	1605
Breakage of Car Wheels.....	1611
Clayton Anti-Trust Act.....	1611
Standardizing Boxes for Checking Testing Machines.....	1612
Possibilities of Cast-Iron Welds.....	1612
Reading Iron Co. on Open Shop Basis....	1613
Decrease in Steel Corporation Orders....	1613
Grindle System of Burning Powdered Coal.....	1614
Electric Welding of Steel.....	1615
New England Foundrymen's Meeting....	1618
Progress of Navy Armor Plant.....	1619
Causes of Depression.....	1622
Labor Notes.....	1624
Editorials.....	1626
Two Shifts or Three Shifts—Contract Problem—Payment of World's Debt to Us	
Correspondence.....	1628
Why the Railroads Are Not Large Buyers of Equipment—Inviolability of Contracts	
Iron and Industrial Stocks.....	1642
Production in Canada.....	1643
Southern Metal Trades.....	1643
C. M. Schwab on Depression.....	1644
Rail Rates for Exports.....	1644
Scrap Dealers' Organization.....	1644
Foreign Trade Conditions.....	1647
British Iron and Steel Output.....	1647
Metal Schedule of Tariff.....	1651
Iron and Steel Markets.....	1630
Comparison of Prices.....	1631
Prices Finished Iron and Steel, f.o.b. Pittsburgh.....	1645
Non-Ferrous Metal Markets.....	1646
Personal Notes.....	1648
Obituary Notes.....	1649
Machinery Markets and News of the Works.....	1652
New York Jobbers' Prices.....	1660

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Two Shifts or Three Shifts

Brief comment was made in last week's IRON AGE on the Drury report presented Dec. 3 at a joint meeting of engineers in New York, covering Mr. Drury's investigations at steel works where the three-shift, in place of the two-shift, system has been in operation. The statement was of the character to be expected in a presentation before a body of engineers, dealing with percentage reductions in the number of men necessary to perform given operations, when the hours on duty were reduced, and referring to some savings experienced in upkeep, also to some increase in rolling mill output. There is testimony of a substantial character indicating that the increase in production costs to be expected through a change from the two-shift to the three-shift system is not altogether as great as usually has been assumed.

The subject needs to be considered, however, from a still broader viewpoint than is presented by the engineering or efficiency basis. For years it has been recognized that eventually the change would have to be made, and a large factor is the opportuneness of the time. Let it be taken that it is a matter of cost. There is, or should be, a relation between costs and selling prices, and commodity prices in general are now in a very decided state of flux, so that a particularly favorable situation is presented.

At one time a 12-hour day was common in American industries. The 12-hour shift has survived in the iron and steel industry because in many operations it was necessary to divide the 24 hours of the day into either two or three parts and the jump from a 12-hour day to an 8-hour day was a very serious matter. In "one-shift" industries the case was altogether different. An explanation of why a practice has survived is naturally not a reason for its continuance, when conditions as to hours of labor have so changed. Another beclouding influence in this matter has been the frequent citation of the percentages of men who work 12 hours. The percentage is wholly dependent upon the size of the divisor taken. If the number of 12-hour men is 150,000, as Mr. Drury estimates, then it is merely a question of how many men are included in the number that is divided into 150,000 to obtain a percentage—how many workers at coke ovens, in coal mines, on lake ves-

sels, at sheet mills, tin mills, etc., are to be added to the 12-hour workers. If the divisor selected is represented to be the total number of men engaged in "the iron and steel industry" and the percentage obtained is small, then the cost of making the change in hours of labor is in relation to that percentage.

Another item of brush that needs to be cleared away is in reference to the wishes of the workmen involved. It is undoubtedly true that many of the men would prefer the 12-hour day to the 8-hour day, even if the reduction in the day's pay under the 8-hour day were very slight, and in the past the supply of such men has been maintained by immigration. Public sentiment in this matter, however, is clearly defined. Such immigration is not generally wanted. One measure before Congress is to forbid immigration entirely for a period, while another, the Welty bill, contemplates regulating immigration according to the country's requirements as determined by a commission, which shall base its rulings upon certain principles, one being that of assimilability. The commission could not find assimilability in any class of men that was distinguished by a desire to work longer hours than is common American practice. "Americanization," in other words, has been written permanently into public thought.

While wage costs in the iron and steel industry have increased greatly in recent years, so also has the cost of duplicating the plant equipment. For economy, it is imperative that the enormous investment should be as productive as possible, and even a small increase in productive capacity is an important offset to an increase in the wage cost per ton of output. A flagrant example of how not to make good use of an enormous investment is the coal industry. It has the eight-hour day, and the percentage of operation is computed by dividing the number of hours worked by eight, not by 24. With a three-shift system the iron and steel industry would still be well off in the important matter of giving its capital investment full employment.

An interesting feature of the decline in pig iron output in the last two months, when there was a net loss of 67 furnaces, is the distribution of this loss. In October, of the 39 furnaces shut

down only two were Steel Corporation furnaces, and of the five blown in one was a corporation furnace. The independent steel companies in October blew in one furnace and shut down 15. In November, of the 44 furnaces which ceased operating, only one was owned by the Steel Corporation while of the 11 blown in seven were those of the leading producer. On the other hand, last month the independent steel companies shut down 19 furnaces and blew in none. In other words, of the net loss of 67 furnaces in the last two months 33 furnaces or 50 per cent were independent steel company furnaces, while in the same period the Steel Corporation made a net gain of 5 furnaces. The remaining losses are, of course, credited to the distinctly merchant furnaces. The position of the Steel Corporation in respect to orders is indicated by these facts.

The Contract Problem

We take pleasure in printing elsewhere in this issue the letter from Oliver M. Fisher, president of the Boston Boot and Shoe Club, and the resolution recently adopted by the club, putting it on record as believing in the inviolability and not the vulnerability of contracts and agreements, and commending all who have accepted their losses, lived up to their contracts and "passed on to the coming generation the torch of high moral responsibility in business relations."

We agree with Mr. Fisher that the club has made a highly commendable and vigorous statement of its position. This action should help and it would be well for other business organizations to take a similar position, but even more vigorous action will be necessary to bring about the greatly to be desired adherence to contracts. As we have pointed out before, there are two sides to the question, for especially during this year, owing to the strikes of railroad employees, miners and others, many manufacturers have found it impossible to live up to their part of the contracts in giving deliveries as promised. Though most contracts contain strike and other provisos, the state of affairs referred to above has given buyers justification in many cases for cancelling their contracts, but the fact remains that for a large part of the cancellation which has taken place there was no justification.

While two wrongs do not make a right, it must not be overlooked that in not a few cases buyers who cancelled asserted that non-delivery was due to the fact that material they had bought was sold elsewhere at higher than contract prices. One result undoubtedly will be the drafting of future contracts so that causes beyond his control shall not give the seller any greater exemption than is granted the buyer by causes beyond the latter's control. But contracts will mean nothing if the reasoning adopted in a recent defense of cancellations becomes the standard of future observance. "When there is a nationwide economic change in business," we are told, "in which the consumer withdraws from the market, as has occurred this year, this is something beyond the control of the buyer" and "therefore he is only exercising his

rights in the matter when he does not take out his contract under such conditions."

No great modification of this language, which is put out on behalf of a committee of purchasing agents, would be needed to justify cancellations in any general decline in values which stops buying. Most distinctly this is not the sort of preachment that will help toward a better standard of contract observance.

Payment of World's Debt to Us

Intelligent and close co-operation between the United States Government and the business and financial interests of the country will be necessary if the world's debt to us is to be paid or even placed upon a definite basis. The latest estimate of this indebtedness is that of the Mechanics and Metals National Bank of New York, thirteen billion as minimum and fifteen billion as maximum.

At present the debt is not even regularly funded. Interest is not being paid on the loans we made to our co-belligerents in the war. The way must be paved for the payment of interest first, and then payment of the principal. The Government can make fiscal arrangements as to the major part of the debt, since the Government is itself the lender, but the sums are so large that the Government cannot secure payment in the form in which the real payment must be made. It can, in essence, accept only gold or exchange, and there has to be a balancing influence in commercial transactions.

The two most feasible ways to produce the necessary balances are those of importing merchandise and of making American investments abroad. In both cases co-operation between the Government and the business and financial interests is necessary. To bring the matter home, and to a subject now engaging attention, Congress contemplates a revision of the tariff. Obviously we cannot have a tariff that shuts out imports, for that would not only curtail the ability of our creditors to pay interest and principal due us, but would prevent our exporting merchandise. Necessarily the tariff must be designed to permit imports and to raise revenue upon them. Commodity prices in all countries of the world being in a state of violent flux, there is room for the assessing of high rates on many at least of the commodities that we should import. In the stable conditions that existed before the war it was possible to assert of some commodities that they would "stand" an import duty of, say, 25 per cent, but would not bear a duty of 40 per cent. Such close statements cannot now be made, when prices are in a state of readjustment. Some fairly high rates may prove quite feasible.

It is impossible, however, for us to import goods so heavily, in relation to our exports, as to balance the payment of interest on thirteen billions of indebtedness, and annual payments against the principal, even if those payments should be strung out over a long period of time. It seems necessary that we should also make foreign investments.

Under the head of foreign investments comes one item with which export trade is intimately

associated. Even before the war there were conspicuous examples of American manufacturers who had been engaged in export trade building factories in foreign countries. Some of these factories are in Canada, and the principle involved is just the same even though Canada is near at hand. The manufacturer makes a foreign investment and in a sense he maintains his export trade. He is still producing the goods the foreigner buys even though he produces them in the foreign country, and the parent company receives the profit.

Imports of merchandise and foreign investments would produce a balance in international exchange whereby debts owed the United States Government could be paid, hence the advisability of co-operation. This brings out another matter: the desirability of the Government undertaking to stabilize exchange, something that is impossible without power, but quite possible if the power is provided. By proper co-operation a method could be worked out whereby exchange rates could be fixed for definite periods at a time. Exporters realize that such a stabilization would stimulate export business greatly, but there is no use stimu-

lating exports unless provision is made against the increased exports producing a reaction.

The heavy export demand for wrought pipe and fittings is one reason for the continued resistance to decline in the quotations of the independent makers of pipe, practically all other products having receded to the Steel Corporation's level. At all events, shipments of wrought pipe and fittings to foreign countries were 21,697 gross tons per month to Oct. 1, this year, as against 19,673 tons per month in all of 1919 and 7498 tons per month in 1918. Of the total of 195,276 tons to Oct. 1 of this year, Mexico received 61,635 tons—this large amount representing activity in oil pipe lines. Japan and British India followed with 26,860 tons and 16,901 tons respectively. In 1913 total exports of wrought and cast pipe and fittings were 25,150 tons per month, further details not being given. Cast iron pipe exports this year averaged 3633 tons per month to Oct. 1, making the average for both kinds of pipe 25,330 tons per month, or substantially at the same rate as in the year before the war.

CORRESPONDENCE

Why the Railroads Are Not Large Buyers of Equipment

To the Editor: My attention having been directed to a letter from Philadelphia, signed "A Merchant," in your issue of Nov. 4, 1920, commenting on what he seems to consider the failure of the railroads to comply "with the distinct understanding that they would take advantage of the increased revenue to put their roads in the proper condition by placing orders for equipment, etc," it seems to me proper that some comment should be made on such a communication because of the prominence secured in your publication.

First, let us see what actual expenditures have already been made and what others prepared for by the railroads. The following information furnished to me by Robert S. Binkerd, assistant to the chairman of the Association of Railway Executives, will be of interest not only to "A Merchant" but to others of your readers:

1.—Additional Equipment

The railroad companies have ordered approximately 40,000 freight cars this year, and are attempting to make financial arrangements which will enable them to increase this sum total to about 50,000. Of these, some 15,000 will be refrigerator cars, there having been no net additions to this class of equipment for some years, and there having been no refrigerator cars constructed at all during the entire 26 months of Federal control.

The companies either have ordered or are making financial arrangements to purchase approximately 1500 additional locomotives and about 1200 passenger cars. The total cost of this equipment is approximately as follows:

	Each	
45,000 freight cars.....	@ \$3,000	\$135,000,000
15,000 refrigerator cars.....	@ 4,500	67,500,000
1,500 locomotives	@ 70,000	105,000,000
1,200 passenger train cars.....	@ 35,000	42,000,000

Total\$349,500,000

In addition to this, the Pullman Co. is building 500

Pullman cars this year, none having been built during the period of federal control.

2.—Additions and Betterments to Fixed Property

Capital expenditures on fixed property this year have necessarily been largely confined to those which would promote the movement of cars.

It is impossible for the carriers, even if the present rate increase ultimately brings them a 6 per cent return, to go into a 7 or 8 per cent money market and raise large sums of money for capital improvements. In addition, the congestion existing and developing at the time private operation was resumed made extensions for the purpose of producing additional traffic for the time being impracticable, and required that the traffic already in existence and incapable of being moved should receive the first provision in facilities.

Accordingly the expenditures made have generally looked toward the enlargement of roundhouses and engine terminal capacity, the increase of shops, machinery and tools for the repair of equipment, the extension of sidings, additional yard tracks, interlocking devices, automatic signals and heavier rail and ballast.

In addition, a number of important carriers have been double-tracking, strengthening bridges, reducing grades, and doing other work necessary for the extension of the operation of heavier locomotives and large capacity cars.

All told, it is estimated that the carriers are spending some \$250,000,000 upon such improvements, of which about \$70,000,000 is being financed by loans from the fund provided by Section 210 of the Transportation act.

3.—Future Expansion

The ability of the railroads to make up even the deferred maintenance of the war period is conditioned not alone upon earnings but upon the prices of labor and commodities, and upon the extent to which and the rapidity with which they realize the return contemplated by the present increase in rates.

When it comes, however, to genuine expansion of the railroad plant, that cannot be looked for in any large measure until there is something like a worldwide readjustment of the conditions of money and credit which would enable an industry with a 6 per cent

earning power to compete against other industries for large sums of money in the investment market. When that time comes, the railroads will undoubtedly make the largest possible use of it, but until then sound policy on their part was very well expressed by Interstate Commerce Commissioner Aitchison in his speech before the National Association of Railway and Utilities Commissioners at Washington on Nov. 10. Commissioner Aitchison said:

The present financial situation, coupled with the apparent downward trend of construction cost, makes it seem prudent not to engage upon any undue or avoidable construction program until conditions become more normal.

While a great deal has been done already by the carriers, the following general considerations should be taken into account:

1. The railroads could certainly not be expected to expend the money until they receive it, and as the increased rates and fares only became effective the last of August (where they were not suspended on intra-state traffic by the order of State commissions), the result was only partially felt in September, and the figures for October are not in all cases yet available; so that it can hardly be claimed that the railroads are in actual receipt of any great benefit as yet, nor could possibly have already expended any large amounts from that source.

2. The act provides for the next two years that rates shall be fixed by the Interstate Commerce Commission which will provide net earnings equal to 5½ per cent of the value of the property, which, generally speaking, was for the purpose of a return to the investor and an improvement in credit, and an additional one-half of 1 per cent of such property value to make provision in whole or in part for improvements, betterments, or equipment. From the figures so far obtainable, few railroads have realized from the increased rates and fares a return of 5½ per cent, much less the one-half of one per cent to be devoted to betterments; so that it cannot be at all clear to most managements that any large sums will be immediately available for expenditure.

3. Taking the matter of equipment: it would seem of doubtful wisdom to make a permanent investment at the present high costs and high rates of interest, involving as it must a continued high charge to provide the necessary return. Expressing the idea in other words, a box car bought now for \$3,300 for 8 per cent money would require an earning of \$264 for interest alone, and would require much higher rates of freight to make such a return, than for the same car bought for \$2,500 at 5 per cent money, for which the interest charges would be \$125 per year.

4. Last but not least, without decreasing the amount of material put into conditioning the property, it has seemed wise to utilize the stock on hand to the greatest possible extent. This the railroads have done, so that on Nov. 1 there was practically no car shortage, and after the end of the switchmen's strike, new records were made in average loading, total loadings, average mileage per day of freight cars, and net ton miles per car per day. This last-named record rose from 487 in March to 557 in August, and is the most significant measure of railroad service which can be used. As a result of the foregoing, the roads are now able, with slight exceptions, to care for all business currently.

In conclusion, there can be no doubt that the managements of the railroads are fully alive to the necessity of "service to the public," and are putting their properties in the best possible shape to perform that service, but they must do so in a wise and careful manner and without any particular advantage to any particular trade.

GEO. D. DIXON,

Vice-President Pennsylvania Railroad Co.
Philadelphia, Dec. 7, 1920.

The Inviolability of Contracts

To the Editor: You were good enough some time since to take notice of some remarks I made at a recent meeting of the Boston Boot and Shoe Club, of which I am the president, and after commending the statement made, you remarked that this is good preaching, but what you would like to know was what we were going to do about it; in other words, what practical action was likely to follow.

In order that you may have a practical answer to your question I enclose you a clipping from a recent newspaper, telling of the action of the Boston Boot and Shoe Club at its last meeting, which is all summed up in the statement of its members that "*We will not cancel our honest contracts, nor have we any place on our books for those who do.*"

If this is not a practical, straight from the shoulder statement of the position the members are willing to take, I don't know what else it can be called, and if all organizations and all business men will take that position, the cancellation of honest contracts will quickly be stopped.

I am simply advising you of this action in order that you may see that our club tries to carry into practical action the sentiments expressed at its meetings.

I thank you for the kind notice you have given some things I have said, and trust they may help to straighten out the chaotic condition we are in at the present time.

OLIVER M. FISHER.

7 Park Square, Boston, Dec. 10.

The resolution referred to by Mr. Fisher in the above letter is as follows:

The Boston Boot and Shoe Club, representing in its membership important business houses in the tanning, shoe manufacturing and kindred lines of trade, and having in mind the long and honorable history of the industry; the men who, living and dead, have stood for character and reliability, whose "word was as good as their bond," who have built great institutions of industry on the solid foundations of truth and fair dealing, does hereby

Resolve: That in these trying times of readjustment and uncertainty and substantial losses in all lines of trade, it goes on record as believing in the *inviolability* and *not the vulnerability* of contracts and agreements; that it commends the great majority of firms in our line of trade who have "played the game" fairly, accepted their losses and lived up to their contracts, and thus nobly carried and passed on to the coming generation the torch of high moral responsibility in business relations.

The Iron Age and Its Readers

Unlike the speaker, the editor cannot sense immediately the responsiveness of his audience. Letters from readers are therefore particularly welcome. They give the best indication that the written messages are reaching their destination. They are helpful in proving that what is being done is filling a needed want. They are helpful in pointing out new avenues of investigation.

We wish it were possible to print all the letters that come to us. Many of these are requests for specific information in extension of something published; others are suggestive of subjects which may be elaborated, while some are printed under "Correspondence" for the general information of the reader. Many letters merely express appreciation of service rendered. One such recent letter is from a machine tool manufacturer in Philadelphia who says:

"We take each issue of THE IRON AGE and read carefully the items under Machinery Markets and News of the Works, covering all the Eastern section of the country. We make a copy of such as are interesting to us and distribute them among our salesmen according to the territory from which they emanate.

"In this way we have developed many profitable orders, for in a great many cases we have learned of some new project first through reading these columns of THE IRON AGE."

Iron and Steel Markets

WAGE REDUCTIONS

New Schedules Go Into Effect at Some Steel Works Jan. 1

Steel Corporation Operates at 90 Per Cent—Further Curtailment by Other Producers

The slowing down of business is more pronounced at many steel plants and the problems of cost reduction are uppermost. Work is being rearranged to save the overtime resulting from the basic 8-hour day and reductions in wages amounting to 15 per cent and in some cases more will be made on Jan. 1 by some important independent companies.

Eight-hour turns are being introduced in some cases in order to give more men work, but because of scant orders there are only two shifts instead of three.

There are reports of wage reductions already made at some plants and one case of an offer by employees to co-operate in plans for reducing labor cost.

There is sharper contrast between the Steel Corporation's rate of operations and the average rate at independent mills. The Steel Corporation increased this week to 90 per cent of steel works capacity and added a blast furnace at Edgar Thomson and another at Gary. The sixth furnace of its Youngstown, Ohio, group will go on next week. Steel Corporation shipments are about 50,000 tons a day, whereas the new bookings are not far from 50 per cent of shipments.

At the same time a further curtailment of output has been made at various Ohio and Pennsylvania independent works and more merchant blast furnaces are stopping, especially in Virginia and Eastern Pennsylvania. An important steel company in the Chicago district will have all of its capacity idle by the end of the week except its blast furnaces and sheet mills.

Taking the country's steel capacity in its entirety, probably 65 to 70 per cent is active this week. This is expected to be reduced next week and through the holidays more mills will be idle than at any time since the holidays of 1914-15.

Total rail reservations for 1921 have been estimated at nearly 2,500,000 tons. But the railroads show no special urgency about deliveries, their plans for 1921 already taking color from current business conditions. The Steel Corporation's new rail extras advance the charge for the nick-and-break test from 80c. to \$1.60. Thus on the Pennsylvania Railroad specification for 130-lb. rails the total extras for nick-and-break test, check analysis and discard will be \$8.90 a ton, as against \$5.80 for 1920.

Pipe making capacity continues to be better engaged than that in other finished lines. With oil prices softening, smaller oil development next year points to an easing in pipe prices. Independent makers of skelp have maintained a 3c. basis thus far and 1000 tons for Scotland was sold at that

price, Pittsburgh. Another export order was for 2000 tons of pipe for Java.

Irregularities, not yet significant, appear in prices of some forms of steel. An example is the resale at low figures of slabs on which certain plate mills preferred to take a loss before Jan. 1.

Hardly 2000 tons of sizable fabricated steel work was put under contract in the week, but new active projects call for twice as much. Among railroad car inquiries is an additional lot of 2500 for the Louisville & Nashville. For 50 locomotives for the Missouri Pacific, the American Locomotive Co. will need 1800 tons of plates.

Several important foundries have been in the market for fair amounts of pig iron for early delivery, but the market has shown weakness where prices have been tested. The sale of some 2000 to 4000 tons of No. 2 foundry for the first half of 1921 has been made at IRON AGE quotations at time of delivery. The Detroit company which recently appeared in the market as a seller on as low a basis as \$30, furnace, for No. 2 foundry is competing chiefly in iron of high silicon content. Stocks of pig iron in Alabama show an increase of about 19,000 tons in the past month, not a large amount under present conditions, and it is probable that stocks in other sections have not increased in greater proportion.

The very high quotations on cast iron pipe maintained for some time, but known to be nominal, are disappearing as pig iron declines. Both Western and Eastern pipe shops have made heavy reductions, those in the East being nearly \$14 per ton. Sellers hope that on the new basis municipalities and private companies will come into the market with liberal orders.

The world-wide recession is accentuated by further shipyard cancellations in Great Britain, including four 10,000-ton boats for Belgium. Due partly to the coal strike, November pig iron production in Great Britain was 403,000 tons, compared with 692,200 tons average for the other ten months of 1920, and the steel output for the month at 403,800 tons compares with a ten months' average of 780,500 tons.

Belgian car and locomotive works in need of orders have protested against the placing of business with German works.

Pittsburgh

PITTSBURGH, Dec. 14.

Maintenance of practically full operation by the several subsidiaries of the Steel Corporation and a further tapering off in the activities of the independents and by the merchant producers of pig iron are the outstanding features of the past week in this district. Independent steel plant operations, which to-day hardly average 50 per cent, probably will not amount to 25 per cent of capacity by the end of the week and an almost complete suspension is indicated before the holidays arrive. New business is so limited and specifications against old orders so largely are being deferred that continued operation could not fail to mean the piling of products. To avoid this, especially on present labor costs, and also to avoid further price concessions which might be necessary to secure rolling schedules,

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Dec. 14, 1920	Dec. 7, 1920	Nov. 16, 1920	Dec. 16, 1919
No. 2X, Philadelphia†....	\$34.79	\$37.79	\$44.79	\$41.10
No. 2, Valley furnace†....	36.00	37.00	39.00	38.00
No. 2 Southern, Cin'ti†....	42.50	42.50	42.50	38.60
No. 2, Birmingham, Ala.†....	38.00	38.00	38.00	35.00
No. 2, foundry, Chicago*....	35.00	36.00	40.00	40.00
Basic, del'd, eastern Pa....	33.86	35.00	41.16	35.00
Basic, Valley furnace....	33.00	33.00	37.50	35.00
Bessemer, Pittsburgh....	36.96	36.96	41.96	37.40
Malleable, Chicago*....	35.50	36.50	40.50	40.50
Malleable, Valley....	36.00	37.00	40.00	37.00
Gray forge, Pittsburgh....	36.96	37.96	39.96	36.40
L. S. charcoal, Chicago....	51.00	51.00	53.50	42.50
Ferromanganese, Atl. port.	110.00	110.00	140.00	120.00

Rails, Billets, Etc.,

Per Gross Ton:

Bess. rails, heavy, at mill.	\$55.00	\$55.00	\$55.00	\$45.00
O.-h. rails, heavy, at mill.	57.00	57.00	57.00	47.00
Bess. billets, Pittsburgh....	43.50	43.50	50.00	48.00
O.-h. billets, Pittsburgh....	43.50	43.50	50.00	48.00
O.-h. sheet bars, P'gh....	47.00	47.00	60.00	50.00
Forging billets, base, P'gh.	51.00	56.00	60.00	60.00
O.-h. billets, Phila....	49.24	49.24	55.74	54.00
Wire rods, Pittsburgh....	57.00	57.00	70.00	60.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia....	3.85	4.35	4.60	3.745
Iron bars, Pittsburgh....	3.63	3.63	4.50	3.25
Iron bars, Chicago....	3.25	3.25	3.75	2.87
Steel bars, Pittsburgh....	2.35	2.35	3.00	2.75
Steel bars, New York....	2.73	2.73	3.38	3.27
Tank plates, Pittsburgh....	2.65	2.65	2.85	2.65
Tank plates, New York....	3.03	3.03	3.38	3.02
Beams, etc., Pittsburgh....	2.45	2.45	3.00	2.45
Beams, etc., New York....	2.83	2.83	3.38	2.82
Skelp, grooved steel, P'gh.	3.00	3.00	3.25	2.45
Skelp, sheared steel, P'gh.	3.00	3.00	3.50	2.65
Steel hoops, Pittsburgh....	3.05	3.05	4.00	3.25

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.

†Silicon, 1.75 to 2.25 ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery

Sheets, Nails and Wire,	Dec. 14, 1920	Dec. 7, 1920	Nov. 16, 1920	Dec. 16, 1919
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	4.35	4.35	6.00	4.35
Sheets, galv., No. 28, P'gh.	5.70	5.70	7.25	5.70
Sheets, blue an't'd, 9 & 10.	3.55	3.55	4.75	3.55
Wire nails, Pittsburgh....	3.25	3.25	4.25	4.50
Plain wire, P'gh....	3.25	3.25	3.75	3.25
Barbed wire, galv., P'gh.	4.10	4.10	4.45	4.45
Tin plate, 100-lb. box, P'gh.	\$7.00	\$7.00	\$7.50	\$7.00

Old Material, Per Gross Ton:

Carwheels, Chicago....	\$24.00	\$27.00	\$33.00	\$30.00
Carwheels, Philadelphia..	27.00	27.00	38.00	30.00
Heavy steel scrap, P'gh....	17.00	19.00	23.00	25.00
Heavy steel scrap, Phila..	16.00	16.00	19.00	22.50
Heavy steel scrap, Ch'go.	16.50	16.50	18.50	20.50
No. 1 cast, Pittsburgh....	27.00	28.00	35.00	30.00
No. 1 cast, Philadelphia....	26.00	27.00	34.00	31.00
No. 1 cast, Ch'go (net ton)	18.50	18.50	22.00	32.50
No. 1 RR. wrot. Phila....	20.00	20.00	24.50	30.00
No. 1 RR. wrot. Ch'go (net)	14.50	15.50	16.50	23.00

Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt....	\$6.00	\$6.50	\$8.00	\$6.00
Furnace coke, future....	6.60	6.60	9.00	6.00
Foundry coke, prompt....	7.00	7.50	9.00	7.00
Foundry coke, future....	8.50	8.50	10.00	7.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York....	14.00	14.00	14.75	19.25
Electrolytic copper, N. Y..	14.00	14.00	14.75	18.87½
Zinc, St. Louis....	5.90	6.25	6.35	8.25
Zinc, New York....	6.00	6.60	6.80	8.60
Lead, St. Louis....	5.00	5.00	6.37½	6.90
Lead, New York....	4.85	5.00	6.50	7.15
Tin, New York....	33.00	35.00	37.00	53.50
Antimony (Asiatic), N. Y.	5.50	5.75	6.00	9.62½

and do not necessarily apply to export business.

suspensions are ordered. The Carnegie Steel Co. last week with its Sharon, Pa., works entirely down, produced 98 per cent of its rated capacity of ingots, and is maintaining the same rate this week. This company has blown out two furnaces, but it also has blown in one, and has 45 of the 59 making iron. The American Sheet & Tin Plate Co. has slightly curtailed its tin plate mill operations, but has put on additional sheet mills and the operating rate for both classes of mills is in excess of 80 per cent. The American Steel & Wire Co. is operating at a higher rate despite the receipt of suspending orders against a considerable amount of tonnage. The National Tube Co. also is running full and is making better shipments than at any other time in several months, thanks to practically normal car supply and railroad transportation conditions. Merchant blast furnaces continue to go out. Only two of the nine merchant stacks in the Shenango Valley are making iron, and although four of the five merchant stacks in the Mahoning Valley are in blast, it is probable that one of these will be blown out soon.

This curtailment of pig iron production is finding reflection in the coke market which has eased off another 50c. per ton since a week ago, in the face of the fact that only about half of the beehive ovens in the Connellsville region remain in operation.

The scrap market remains extremely weak, the direct reflex of conditions in the market for iron and steel. Although scrap prices have not yet reached a point where speculative purchases may be safely made, it is considered to be only a question of days until that condition is an established fact, for buying is nil on the part of melters and dealers are well covered against such contracts as they are able to ship against.

The most active spot in the finished steel market is

in pipe, but even in this product there are some signs of a slowing up and the prediction is beginning to be heard that before 1921 is very far advanced the prices of independent makers will recede to the Steel Corporation levels. In view of the fact that the independents are well sold ahead, especially on oil country pipe, a recession would seem to be based on psychological grounds alone, although it is a fact that oil prices are beginning to follow the downward tendency of commodities in general and if the decline runs very far, it might well result in some falling away in development work. It is well established that the strength of the market in tubular goods is based largely on the huge demand in connection with oil country development.

There is much discussion of the probable duration of the present dullness. In some quarters it is expected that business will get better very soon after the turn of the new year, while in others betterment is not looked for until the second quarter. Much seems to hinge on how soon and how much the railroads buy, for most recent advices from Detroit suggest only a slight chance of material improvement in the automobile industry until well into the spring, and declining prices for farm products are expected to restrict the activities of the agricultural implement manufacturers. In view of the fact that inventories have been sharply reduced in value, it would seem that consumers of both iron and steel, as a result of that necessary action, would not be able to borrow as heavily in the early part of 1921 as in the fore part of the present year. In other words, inventories which represent a quick asset being smaller this year than a year ago, there will be necessarily a corresponding curtailment of credit.

Pig Iron.—We note a sale of from 2000 to 4000 tons of No. 2 foundry iron for shipment over the first

half of 1921, the price to be fixed on THE IRON AGE quotations for that grade, from Valley furnaces. The sale is reported by a middleman and may or may not be Valley iron. The sale is the only important one recently done in this market, and its chief significance lies alone in the fact that some melters are ready to go ahead with their early 1921 requirements on a basis of prices at time of shipment. Generally, business is quite as slack as it has been at any time in the past three or four weeks and quotations are merely appraisals and no doubt would be shaded very materially on the appearance of anything like a bonafide inquiry for a sizable tonnage. Merchant producers have based their prices on present costs and are disposed to blow out their stacks rather than pile iron. It is probable that soon after the turn of the new year there will be a new valuation, due to the fact that coke at least will be cheaper than that now going to the furnaces on contracts. There is also the possibility of lower labor costs through greater individual efficiency that always develops when labor is plenty and through the elimination of extra remuneration for overtime. Prices of foundry, forge and malleable grades have been reduced \$1 per ton since a week ago, not on sales, but rather because makers have expressed a willingness to accept lower prices on any tonnages that might come out. No. 2 foundry now is quoted from Valley furnaces at \$36, but business at that price seems out of the question at present, in view of the fact that a fairly sizable quantity of resale iron is hanging over the market at \$35.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic	\$33.00
Bessemer	35.00
Gray forge	\$34.00 to 35.00
No. 2 foundry	35.00 to 36.00
No. 3 foundry	34.50 to 35.50
Malleable	35.00 to 36.00

Ferroalloys.—Practically nothing is being done at present and prices remain nominal, although the tendency is down because of the existence of so much tonnage in the hands of consumers which they are rather anxious to move. We note a resale of about 100 tons of 76 to 80 per cent domestic ferromanganese at \$110, delivered, and this price seems to be maximum on such tonnages. The decline in the price of this material, however, has been so great that some consumers who have surplus stocks now feel that it would be more profitable to melt them rather than to sell at the price they would bring to-day. This might well mean a steadier market if all holders felt the same way. Domestic producers still are quoting \$150 seaboard, and English makers \$140 seaboard, but frankly admit no sales have taken place at these figures, and that they would consider firm bids of less. Producers' quotations on average 20 per cent spiegeleisen range from \$70 to \$75 furnace, but it is admitted no business has been or can be done at this price, and it is reported that resale lots have sold in other districts as low as \$55 furnace. The appearance of an attractive inquiry for ferrosilicon or silvery iron, it is believed, would bring out materially lower prices than are publicly quoted.

We quote 76 to 80 per cent domestic ferromanganese at \$150, seaboard; English, \$140 on direct sale; resale tonnages \$105 to \$110 seaboard. We quote average 20 per cent spiegeleisen nominal at \$70 to \$75 furnace, on direct business and \$55 to \$60 for resale tonnages; 50 per cent ferrosilicon, nominal, \$75 to \$80 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces, as follows: 9 per cent, \$61; 10 per cent, \$64.50; 11 per cent, \$67.80; 12 per cent, \$71.10. Silvery iron, 6 per cent, \$51.50; 7 per cent, \$53; 8 per cent, \$55; 9 per cent, \$57; 10 per cent, \$59.50; 11 per cent, \$62.80; 12 per cent, \$66.10. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

Plates.—Demands remain few and small, and there is a steady decrease in the amount of independent capacity in operation. Steel Corporation mills are well engaged and are making such big inroads upon old orders that it seems probable that it soon will be able to take on new business and guarantee fairly early delivery. Reports have been heard from outside districts that a price of 2.50c., or \$3 per ton less than the regular market price, has been named on plates for immediate shipment, but makers here doubt the ac-

curacy of such rumors as far as direct business is concerned. It is admitted, however, that such a price might have been done on some resale tonnages.

We quote sheared plates of tank quality $\frac{1}{4}$ in. and heavier at 2.65c., Pittsburgh, this being the quotation of both the Carnegie Steel Co. and the leading independents.

Billets, Sheet Bars and Slabs.—The present market is the duller that has ruled at any time this year, and while prices of the independent makers are indefinite in the absence of any business, it can be stated safely that buyers would have no trouble in securing tonnages at the Steel Corporation prices, or \$47 for sheet bars, \$46 for slabs and \$43.50 for rerolling billets. Some independent makers are quoting rerolling billets at \$45, but have not succeeded in getting any business at that price. Open market offerings in all forms of semi-finished steel are light, due to the curtailment of steel works operations by a number of independents who usually have tonnages for sale.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$43.50 to \$45; 2 x 2-in. billets, \$47 to \$48.50; Bessemer sheet bars, \$47; open-hearth sheet bars, \$47, and forging billets, ordinary carbons, \$51 to \$55 base; slabs, \$46; all f.o.b. Youngstown or Pittsburgh mill.

Structural Material.—Much interest is noted here in the revival of the inquiry of the Mellon National Bank for a new building involving about 2000 tons of steel, to be erected on the site of its present quarters. Bids for this building are to be opened Dec. 17. No special significance attaches to this inquiry as pertaining to a possibility of an award, and in some quarters it is regarded frankly as a feeler, put out chiefly for the purpose of ascertaining the actual cost of putting up the building early next year. The new Statler hotel project at Buffalo is regarded here as dead until well after the turn of 1921. The McClintic-Marshall Co. has taken 250 tons of steel for bridge work in Brazil, but this constitutes the only important award which lately has come here. Plain material is dull with practically all companies quoting the March 21, 1919, prices on plates, large structural shapes and bars. Small shapes are held at 3c. by the leading independent, but the Carnegie Steel Co. continues to quote them on the bar card, with the usual extras. Prices are given on page 1645.

Wire Products.—Fairly good demand still exists for wire nails, but other common wire products are extremely slow, both as far as sales and specifications are concerned. Even the Steel Corporation is getting suspensions against shipments of manufacturer's wire and the general disposition of buyers is to defer as much tonnage as possible into 1921. Neither the American Steel & Wire Co. nor the Jones & Laughlin Steel Co., both of which are quoting nails at 3.25c. base per keg, is taking business from new customers at that base. The former is maintaining comparatively full plant operations, but few of the independents are running higher than 50 per cent and the average of the latter will be even lower before the passing of another week, as some companies are planning complete suspensions Saturday night for at least the remainder of the year.

We quote wire nails at \$3.25 base, the price of the American Steel & Wire Co. and Jones & Laughlin Steel Co. and \$3.75, the price of other independents. We quote bright basic and Bessemer wire at \$3.25, the price of the American Steel & Wire Co. and independents.

Hot-Rolled and Cold-Rolled Strips.—The recent reduction in prices by the leading Pittsburgh district makers has been ineffective in stimulating business and there is fresh talk of a further cut. The price of 7c. base, quoted by all independent makers on cold-rolled strip steel is \$15 per ton above the Steel Corporation base, while it is noted that all independent makers of hot-rolled strips are not adhering to 4c. base, the price recently announced. At least one maker would take attractive tonnages at 3.50c.

Spikes.—The Louisville & Nashville Railroad has placed the 15,000 kegs of spikes for which it inquired a few weeks ago, about 8000 kegs coming to Pittsburgh district independent makers. This business carried 3.65c., the price recently named. Some makers have not yet revised their prices, still holding to 4c. base for large spikes. Old orders are pretty well exhausted and deliveries are being promised against new orders for

large spikes in 30 days and before Feb. 1, on small spikes. Prices are given on page 1645.

Cold-Finished Steel Bars.—New demands are negligible and specifications against old orders are small, despite the fact that at 3.60c. base most independents claim they are losing money on current labor costs. Plant operations are running down pretty rapidly and present indications are that practically all, if not all, of the capacity will be idle before the end of the month.

Hoops and Bands.—Decline in independent prices has been without effect upon demand; in fact, business is quieter with most makers than it was before any change was made in prices. The price range now is from 3.05c. base, as quoted by Carnegie Steel Co. and a leading Pittsburgh independent, up to 3.50c. quoted by other makers.

Sheets.—The closing weeks of the year find the American Sheet & Tin Plate Co. operating at the highest rate in several months and getting almost no suspensions of shipments. With the independents, however, conditions are almost the reverse, as the bulk of their bookings were of high priced steel, and because of the recent decline in prices, specifications are being largely withheld. At least two companies in this district will shut down to-morrow for an indefinite period. One of these companies has a considerable tonnage on its books, but it is chiefly in automobile sheets and in the absence of real improvement in that industry, specifications are hard to obtain. Local advices suggest little, if any, improvement in the automobile situation until spring and it is probable that the companies which have in the past devoted a good deal of their production to automobile sheets will have to build up a new trade in order to get their plants going in the meantime. There have been reports that some makers have quoted as low as 4.20c. base for black sheets for immediate shipment, but verification is lacking and there is considerable doubt that any mill which had to buy steel would go that low, since this would spell a heavy loss. No trouble, however, would be experienced in buying at Steel Corporation levels, as practically all of the large independents now are down to those bases. Prices are given on page 1645.

Tin Plate.—The market is seasonably dull, but fairly firmly established at \$7 per base box for production tonnage. The market, however, is not sustaining the expectations of a few months ago that an advance over \$7 might be obtainable. This is due in part to the virtual disappearance of export demands, while domestic requirements have not turned out to be as big as they seemed likely to be during the period when manufacturers, because of the lack of steel, or of shipping facilities, were not getting much stock forward. Financial conditions in Cuba and South America, not to mention those in the Far East, have resulted in the holding up of considerable tonnages made up for export and it is well established that some rather large quantities of export tin plate are available in New York, at as low as \$13 per case, or \$6.50 per base box. Almost no export business is being offered manufacturers to-day and the price is indefinite owing to the lack of important sales. Buyers probably could place such business, however, at the domestic base of \$7. There is a wide variance in the operations of the independents, some of them running practically full while others are down around 50 per cent of capacity. Operations by the leading interest have been cut somewhat to permit the steel to go to its sheet mills.

We now quote tin plate to domestic consumers at \$7 per base box; stock items, \$6.50 to \$7, and for export, \$7 per base box, all f.o.b. Pittsburgh.

Steel Rails.—Unofficially it is stated the present prices of standard rails of \$45 for Bessemer and \$47 for open hearth have been reaffirmed by the Corporation, and nothing has yet come out as to the possibility of higher prices through increased extras. The base sizes of light rails still are quoted at 3c., but more than the usual extras for rails lighter than 25 lb. still are being asked by one independent maker. Mills rolling these light sections from old rails are not much of

a factor in the present market. The Carnegie Steel Co. does not figure much in current demands, as its bookings will carry it well into next year.

We quote 25 to 45-lb. sections from 2.45c., the price of the Carnegie Steel Co., to 3c., the price of the independent makers rolling from new steel; 16-lb. and 20-lb. sections are priced 4½c. per 100 lb. higher than the base sizes, 12-lb. and 14-lb. sections, 9c. per 100 lb. above base and 8-lb. and 10-lb. sections 13½c. per 100 lb. above base. Standard sections, 50 lb. and heavier, are quoted by the Carnegie Steel Co. at \$45 for Bessemer and \$47 for open hearth stock and by independent mills from \$55 to \$65 for Bessemer and \$57 to \$67 for open-hearth rails.

Iron and Steel Pipe.—Pipe-making capacity is fully engaged, and with the National Tube Co. heavily committed for several months ahead, practically all of the tonnage wanted for early 1921 delivery is going to the independents. Specifications are coming in fairly freely, and the result of these conditions is the maintenance of the spread between independent and Steel Corporation quotations. Nevertheless, murmurings of a possibility of a reaction in independent prices to the Corporation level at no distant date are beginning to be heard. These suggestions seem to be based on the fact that oil prices are beginning to soften, and this, it is figured, may lead to less extensive development work next year than had been planned. Distributors, however, have not been able as yet to accumulate any stocks despite the full mill operations and free shipments, and this is considered as likely to hold up prices longer than they otherwise might. Discounts are given on page 1645.

Skelp.—Independent makers are holding to 3c. for steel skelp, but it is believed that this relative firmness is due more to light surplus supplies than to a good demand, and that there would be some shading on the appearance of a desirable tonnage. Sale of 1000 tons of steel skelp for export to Scotland is noted at 3c., Pittsburgh. This would rather indicate a weaker situation in view of the fact that hitherto a premium over domestic prices has been asked on export tonnage. Non-integrated makers of boiler tubes have suffered a considerable contraction in business and are neither specifying nor buying much skelp.

Boiler Tubes.—The market on steel boiler tubes is growing weaker, as far as independent makers are concerned, and buyers to-day would not have any trouble in securing tonnages from them within about five points of the National Tube Co. discounts. This compares with the recent spread of 10 points and in some instances more. Order books of the independent companies have dwindled sharply in the past few weeks, but they are somewhat better off on orders for charcoal iron boiler tubes, and while there is considerable irregularity in prices, concessions are smaller than on steel tubes. Jobbers in this district have abandoned, for the time being, quoting discounts on less than carload lots, and have substituted net prices per foot. Formerly they charged about 4 points over the mill base on carload lots. The new jobbing quotations follow:

	Boiler Tubes		Seamless
	Charcoal Iron	Lap Welded	
1¼ in.			20c.
1½ in.			19c.
1¾ in.	27½c.	21c.	21c.
2 in.	24¼c.	21c.	21c.
2¼ in.	28c.	23c.	23c.
2½ in.	32c.	26c.	27½c.
3 in.	39c.	33c.	33c.
3¼ in.	46c.	38c.	40c.
3½ in.	46c.	38c.	42c.
4 in.	58½c.	46c.	59½c.
4½ in.	66c.	66c.	...

Car load lot discounts are given on page 1645.

Nuts, Bolts and Rivets.—Not much is going on at the lower prices recently established, which seem to have been adopted more for the purpose of enabling jobbers to adjust their inventories than in the expectation that the reduction would bring about a larger demand. Makers in this district have not been getting much new business lately, and are chiefly engaged on orders which have been on their books for some time. Some shading on rivet prices is noted and it is believed that eventually all makers will make a further cut of \$5 per ton, to \$4.25, for structural rivets and \$4.35

for those used in making boilers. Prices and discounts are given on page 1645.

Chain.—Although there have been no changes in the base price of steel chain, it now is admitted that a reduction is likely, once manufacturers have succeeded in effecting some reduction in labor costs.

Iron and Steel Bars.—No change is noted on steel bars either as regards prices or demand. The response to the reduction recently advanced by independent makers has been poor and until inventories are completed not much improvement is expected. It is doubtful whether as much independent bar mill capacity is active today as was engaged prior to the price reduction. The market is weakening on iron bars and makers now are quoting refined iron bars at 4.75c. to 5c. as compared with the recent range of 5c. to 5.50c. No common, or all scrap iron bars, are made in this district, but they are being offered as low as 3.25c., Chicago, by some makers in that district, or 3.63c. delivered, Pittsburgh, or 4c. delivered, Pittsburgh, by Eastern makers.

We quote steel bars rolled from billets at 2.35c.; reinforced bars, rolled from billets, at 2.35c., base; common iron bars, 3.63c. to 4c., delivered Pittsburgh; refined iron bars, 4.75c. to 5c., in carloads, f.o.b. mill, Pittsburgh.

Old Material.—The decline in prices is unchecked and on practically all grades fresh declines running from \$1 to \$2 per ton are noted. In the absence of any consumptive demand, the market is rapidly moving toward levels at which consumers or dealers can lay the material on their yards. With independent steel works operations on a steadily narrowing scale and the possibility that a number of them will go down completely during the last half of this month, buying is practically nil. Indeed, it is impossible for dealers to make shipments on old contracts, as such shipments are entirely by permit, the issuance of which is in the hands of the steel manufacturers. Some of the manufacturers have so much material loaded in cars lying at their plants, that they are trying to resell some of it in order to relieve congestions. The weakness of the market further is apparent from the fact that dealers have been able to buy No. 1 railroad steel on recent offerings as low as \$16.25. Prices only in a few instances are based upon sales and in general merely are approximations.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$17.00 to \$18.00
No. 1 cast cupola size.....	27.00 to 28.00
Re-rolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh.....	24.00 to 25.00
Compressed sheet steel.....	16.00 to 16.50
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.	11.00 to 12.00
Railroad knuckles and couplers.....	18.00 to 19.00
Railroad coil and leaf springs.....	18.00 to 19.00
Railroad grate bars.....	18.00 to 19.00
Low phosphorus melting stock, bloom and billet ends, heavy plates, 3/4 in. and heavier.....	26.00 to 27.00
Railroad malleable.....	24.00 to 25.00
Iron car axles.....	40.00 to 41.00
Locomotive axles, steel.....	35.00 to 36.00
Steel car axles.....	28.00 to 29.00
Cast iron wheels.....	30.00 to 31.00
Rolled steel wheels.....	18.00 to 19.00
Machine shop turnings.....	10.50 to 11.00
Sheet bar crop ends at origin.....	19.00 to 20.00
Heavy steel axle turnings.....	15.00 to 16.00
Short shovel turnings.....	13.00 to 14.00
Heavy breakable cast.....	23.00 to 24.00
Stove plate.....	19.00 to 20.00
Cast iron borings.....	14.00 to 15.00
No. 1 railroad wrought.....	22.00 to 23.00

Coke.—With the blowing out of so many blast furnaces ordinarily served by Connellsville coke, the spot market has disappeared largely and prices are being established on very limited tonnages, since production has been scaled off in keeping with consumption. On recent business \$6.50 per net ton at oven has been the maximum on furnace grade while direct sales have been made at \$6, and on stranded tonnages which had to be moved promptly a price as low as \$5.50 has been made. We also note a cleanup by a producer in the eastern part of the region preparatory to putting down his ovens, at \$5. This coke, however, runs high in ash and for that reason is hardly standard grade. The

contract market in furnace coke has shown some activity. One large operator has disposed of about 80 per cent of his production for first half of next year on a basis of five to one on Valley basic pig iron. A minimum price is named in these contracts, but no maximum, other than a provision that in the event that iron goes above \$35 the ratio is changed to give the producer some of the benefit. Spot foundry coke is available at \$7 to \$7.50 per net ton, oven, with only a moderate demand. Producers are quoting from \$8.50 to \$10 on first half requirements, but are getting almost no business, buyers being disposed to regard these prices as too high and to defer purchases.

OUTLOOK FOR BUYING BETTER

Improvement in Some Conditions at Youngstown—Lower Pig Iron Prices Expected

YOUNGSTOWN, OHIO, Dec. 14.—While new business offered steel producers in this territory is still spotty, evidence accumulates that buying interests are more disposed to enter into contracts. A district sheet maker has virtually closed an order for 10,000 tons of highly finished sheets for first quarter delivery, for an automobile manufacturer in Detroit. Another interest is rolling an order for 2000 tons of black sheets for conversion into drums and barrels. Orders aggregating 5000 tons of black sheets of various gages were recently received by a Valley maker. The Youngstown Sheet & Tube Co. is reported to have taken a substantial order for 10-in. pipe from the Texas Co., while the Republic Iron & Steel Co. has produced heavy tonnages of pipe for Japan. Last month the Republic company shipped 21,000 tons of pipe, breaking all records for monthly shipments of such product.

Some sheet and bar tonnage has come to district independents as a result of cancellations received by the Steel Corporation, inasmuch as the independent prices are virtually the same and deliveries are much better. Most of this business is from jobbing interests.

Aggregate of the new activity has been such as to give steel makers basis for a more optimistic viewpoint with respect to the immediate future.

Lower Fuel Prices

Another favorable factor, from the producing standpoint, has been the sharp decline in raw material prices. Steam coal, for instance, is being offered industrial consumers at \$3.50 to \$3.75 for spot delivery, while high-grade run-of-mine gas coal is offered at \$4. Blast furnace coke is offered from \$5.50 to \$6 per ton, one coke maker offering up to 35,000 tons.

As a result of the softer prices for fuel, sellers of pig iron expect a price in the immediate future under \$30. Because of the evident belief of iron buyers that prices will still further decline, buying is still sharply contracted.

Scrap Much Lower

Heavy melting scrap is obtainable as low as \$16, say some consumers, which compares with a peak of \$31. Hydraulically compressed material ranges from \$13 to \$14. Ferromanganese is being obtained by some local interests at \$100, though the nominal resale market is \$115. Under influence of reduced production, spelter has recovered to 6.25c. from 5.55c., the low price. In fact, the entire material market is reflecting the weakening symptoms of the iron and steel markets.

One of the significant developments in the semi-finished materials market is the entrance of makers who have for a long time consumed all of their production in their finishing departments. Open-hearth sheet bars are generally quoted at the Steel Corporation base of \$47, though some consuming interests are holding out for \$45. Lower pig iron, which is a likelihood of the near future, will help to equalize costs of producing semi-finished and finished material with the reduced selling prices.

New York

NEW YORK, Dec. 14.

Pig Iron.—The announcement that iron was obtainable from a Detroit furnace on the basis of \$30 for No. 2 foundry caused considerable stir in the market and it is announced that after some selling had been done on that basis, prices have been advanced \$3 per ton. It is asserted in some quarters that while the sales would figure back to \$30, with the usual differentials, the iron sold was all higher in silicon than No. 2 analysis, 1.75 to 2.25 per cent. The iron was not particularly attractive in New York territory on account of the high freight rates. A sale of 500 tons of No. 2 plain has been made by an eastern Pennsylvania furnace at \$35, furnace. The appearance in the market of two buyers of importance—Crane Co. of Bridgeport, Conn., for 2000 tons, and a railway equipment company for 2500 tons—is accepted as an indication that some melters of large tonnages are doing considerable business and find it necessary to make additional purchases to cover early requirements. The Crane Co. has purchased about half of the tonnage inquired for, but the details as to the transactions are not available. The inquiry of the equipment company is for December, January and February delivery, and only a small part of the tonnage has been purchased. On Buffalo iron, from \$35 to \$36 base, furnace, is the usual quotation.

We quote for delivery in the New York district as follows, adding to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa., No. 1 fdy., sil. 2.75 to 3.25.	\$40.52 to \$41.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75.	38.77 to 40.77
East. Pa., No. 2 fdy., sil. 1.75 to 2.25.	37.52 to 39.52
Buffalo, sil. 1.75 to 2.25.	40.46 to 41.46
No. 2 Virginia, sil. 1.75 to 2.25.	43.91 to 44.91

Ferroalloys.—It is impossible to state at just what price ferromanganese could be sold if there were any demand for it. It is conceded that the last quotation of \$150, delivered, for the American product and \$170, seaboard, for the British could be shaded to a considerable extent, at least as low as \$140 and possibly lower. There is, however, an entire absence of business though there have been several inquiries which have turned out largely to be an attempt on the part of holders of ferromanganese to establish a value for their inventories. The production of ferromanganese by American blast furnaces in November was 23,153 gross tons, according to the blast furnace reports of THE IRON AGE, which is practically equal to the average for the 10 preceding months. This would indicate a large accumulation of stocks in this country. The spiegeleisen market is lower at \$60, furnace, at which level 100 tons for early delivery was recently sold. There are inquiries in the market for a few carloads. Manganese ore is nominal at 42c. to 50c. per unit, seaboard. Ferrosilicon, 50 per cent, is inactive at \$80 per ton, delivered.

Finished Iron and Steel.—The scarcity of orders for steel products is forcing further reduction of operating schedules. Several of the Eastern independent mills are virtually shut down or are not producing to exceed one-third of normal output. There is no indication that the reduced prices have brought out any appreciable amount of business. Some further price reductions have taken place. Bar iron is now to be had at 3.50c., Pittsburgh, a reduction of \$20 a ton from the recent peak price. A maker of bars, whose output is mainly special quality, has reduced its price from 3c., base, to 2.50c., base. Makers of soft steel bars, however, are anxious for orders at 2.35c., base, Pittsburgh. Some name this price both for domestic and export business, but one large independent quotes 2.55c., Pittsburgh, for export. An order for 500 tons of thin gage plates was placed last week with a Middle Western mill at 2.65c., Pittsburgh. These plates a few months ago would have been quoted on a sheet base with sheet extras. The American Locomotive Co. will come into the market this week for 1800 tons of plates required for 50 locomotives purchased by the Missouri Pacific Railroad. Half of this locomotive order was placed in November and the other half last week. The Pittsburgh & West Virginia Railroad has bought six locomotives of the

American Locomotive Co. No new car orders or inquiries are reported. Structural steel awards include the following: Hinkle Iron Co., 250 tons, for a building on Front Street, New York; Hay Foundry & Iron Works, 300 tons, for a bakery at Jamaica, Long Island; Hinkle Iron Co., 350 tons for the Times Square post office, New York; Shoemaker-Satterthwait Bridge Co. for 75 tons for the New York Connecting Railroad, and American Bridge Co. for 50 tons for the New York Central. New work includes 2000 tons for a power plant for the Government at Washington; 1400 tons for an office building, Boston, and 450 tons for an industrial school at Baltimore. One reliable estimate is that rail purchases do not yet total 2,500,000 tons but much is yet to be bought; most of this apparently will have to go to independent mills at the \$57 price.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.73c.; plates, 3.03c.; shapes, 2.83c.; bar iron, flats, wider than 6 in., 4.38c., with half extras; light rounds, squares and flats, 4.88c., with full extras, and other sizes, 3.88c., with half extras.

Warehouse Business.—Buying is light, consumers evidently reducing inventories toward the end of the year. While stocks are large there is a shortage of some sizes and there is some activity in reselling between jobbers to fill small orders. All warehouses, including the foremost independent and dealers in small lots, are quoting the same prices on sheets; blue annealed, No. 10, 5.20c. per lb.; black, No. 28, 6.50c. per lb., and galvanized, No. 28, 8c. per lb. Tire steel has been reduced to 3.75c. per lb., with smooth finish at 4.25c. per lb. Shafting and screw stock is quoted by all warehouses at 5.50c. per lb. for rounds and 6c. per lb. for squares, flats and hexagons. Hoops have been reduced from 6c. per lb. to 4.70c. per lb. Toe calk steel remains firm at 5c. per lb., and one warehouse reports having received a recent mill quotation of 4.50c. per lb., f.o.b. mill. Slightly better prices than this have been received from other mills. There is no change in the brass and copper situation, but a slight price revision may be made after Jan. 1. Steel wire is off \$2 per 100 lb. We quote prices on page 1660.

High Speed Steel.—The market shows a slightly better tone, small orders again appearing from tool makers. Domestic producers continue to quote \$1.25 per lb. for 18 per cent tungsten high speed steel with orders of any size at lower than this price. Sluggish conditions in the English market have resulted in a reduction by makers in Sheffield.

Old Material.—The market remains lifeless with no buying by the mills and but little purchasing among dealers. Many of the latter are laying off their employees. Heavy melting steel has been offered at as low as \$10 and No. 1 machinery cast at a cent a lb. Many believe that the bottom has been reached, claiming that dealers will not sell for less.

Buying prices per gross ton, New York, follow:

Heavy melting steel	\$10.50 to \$11.50
Rolling rails	18.50 to 19.00
Relaying rails, nominal	50.00 to 53.00
Steel car axles	20.00 to 21.00
Iron car axles	32.00 to 33.00
No. 1 railroad wrought	18.00 to 19.00
Wrought iron track	12.00 to 13.00
Forge fire	9.00 to 10.00
No. 1 yard wrought long	17.00 to 18.00
Light iron	5.00 to 6.00
Cast borings (clean)	12.00 to 13.00
Machine-shop turnings	9.50 to 10.50
Mixed borings and turnings	8.00 to 9.00
Iron and steel pipe (1 in. diam. not under 2 ft. long)	10.00 to 11.00
Stove plate	17.00 to 18.00
Locomotive grate bars	17.00 to 18.00
Malleable cast (railroad)	13.00 to 14.00
Old car wheels	23.00 to 24.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	\$26.00 to \$27.00
No. 1 heavy cast (columns, building materials, etc.) cupola size	26.00 to 27.00
No. 1 heavy cast, not cupola size	18.00 to 19.00
No. 2 cast (radiators, cast boilers, etc.)	19.00 to 20.00

Cast Iron Pipe.—A cut in price of \$13.92 per ton was made Tuesday of this week by the Warren Foundry & Machine Co., 11 Broadway, New York, bringing its figure for 6-in. pipe to \$60, f.o.b. Phillipsburg, N. J., or \$63.30, New York, just \$1 higher than prevailed a

year ago. At the same time the \$2 differential for Class A and gas pipe has been raised to \$4. Two reasons are given for the drastic cut: The fall in the price of pig iron and the desire to make prices attractive to municipalities and private companies which had been awaiting such a reduction. Company officials maintain that they preferred to make a direct cut to the "bottom," rather than make a series of cuts which tends to make buyers hesitate. They saw the price-cutting tendencies in the Southern and Chicago districts and did not wish to lag behind. Pipe is now obtainable, therefore, f.o.b. New York, as follows: 6-in. and larger, \$63.30; 4-in., \$73.30; 3-in., \$83.30, with \$4 additional for Class A and gas pipe.

Cleveland

CLEVELAND, Dec. 14.

Iron Ore.—With direct furnace shipments cut off by the closing of the season of navigation, little ore is now going forward to consumers, although a few furnaces are taking advantage of the mild weather by having ore shipped from railroad docks to the amount of their present consumption, thus keeping their stock piles in good shape and making it possible for them to cut down on shipments during the severe winter weather. Ore receipts at Lake Erie ports during November were 5,289,344 gross tons, and for the season until Dec. 1, 44,424,263 tons, as compared with 36,658,795 tons to Dec. 1 last year. Shipments from Lake Erie ports during November were 3,739,267 tons, and for the season to Dec. 1, were 32,016,654 tons, as compared with 25,306,777 tons up to Dec. 1 last year.

We quote delivered lower lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesaba Bessemer, \$7.20; Mesaba non-Bessemer, \$6.55.

Pig Iron.—The demand for early shipment foundry iron showed a little improvement during the week. Two producers made small lot sales aggregating about 1800 tons, mostly for December-January delivery. Prices have further declined \$1 to \$2 per ton on foundry iron. One lake furnace made sales at \$35 for No. 2, while sales by Valley furnaces were made at \$37. However, it is probable that this grade can now be bought from a Valley furnace at \$36. Considerable interest has been aroused in the trade over the selling policy of the Ford Motor Co., which recently began offering pig iron at lower than usual furnace prices. Conflicting reports are current as to the prices quoted by this company. However, it is offering considerable iron running 2.25 and higher in silicon at \$35 for 2.25 to 2.75 silicon and is using the \$35 2.25 silicon price as a base for iron running higher in silicon. On the other hand, quotations as low as \$31 are reported to have been made by this company on No. 2 foundry iron. The Ford company purchases large quantities of castings and the trade recognizes that this company can save money on castings by selling pig iron at low prices to foundries with which it has casting contracts, making up for concessions on pig iron by getting castings cheaper. In other words, transactions of this kind are regarded in the trade somewhat as conversion deals. It is also reported that the Ford company wants to place its second furnace in blast and it is anxious to fill up its order book for that furnace for the first quarter. Considerable resale foundry iron is still being offered in this territory without price, foundries asking for offers. An Erie foundry is asking \$34 for several hundred tons of No. 2 foundry. Shipments show no improvement. An additional merchant furnace, one of the Toledo Furnace Co.'s stacks, was blown out Monday.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c. switching charge for local iron, a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and \$6.67 from Birmingham:

Basic	\$34.96
Northern No. 2 fdy., sil. 1.75 to 2.25..	\$35.56 to 37.56
Southern fdy., 2.25 to 2.75.....	44.67 to 46.67
Ohio silvery, sil. 8 per cent.....	53.36 to 58.36
Standard low phos., Valley furnace..	52.00 to 55.00

Finished Iron and Steel.—The demand for finished steel is very limited, and is restricted to small lots for immediate requirements. Some new inquiry has come out, but consumers seem to be withholding orders as

far as possible until after the first of the year. Local plate mills are quoting plates at 2.65c., Pittsburgh, but are taking a very positive stand against shading this price. Some of the plate mills that have stocks of high-priced semi-finished steel are selling their products at considerable loss, but have decided to liquidate their inventories so that their losses can be shown as far as possible in their income tax returns of the present year. There has been further closing down of mills in this territory. The McKinney Steel Co., which has operated seven of its open-hearth furnaces for some time, has shut down its steel plant, but continues to operate three blast furnaces and its coke oven plant. The Union Rolling Mill plant of the Bourne-Fuller Co. has suspended operations. The Upson Steel plant and the Empire Rolling Mill of this company were previously closed down. The Otis Steel Co. continues to operate its Lakeside and Riverside works, but only the former at full capacity. Automobile plants in this territory continue to operate at very limited capacity, but more activity is expected in this field after the first of the year. The brightest spot at present is the outlook in the building field. Preliminary inquiries for considerable building work have reached fabricators. Some of this was held up this year because of high prices. The Cleveland Trust Co. is asking for bids for a branch bank building requiring 400 tons. Orders placed include three lots of sheet steel piling for building work aggregating 450 tons. Some of the fabricating shops are in need of orders and are quoting very low prices on small fabricated jobs.

Cleveland warehouses quote steel bars at 3.30c. to 3.34c.; plates, 3.60c. to 3.64c. and structural material, 3.40c. to 3.44c.; No. 9 galvanized wire, 4.70c.; No. 9 annealed wire, 4c.; No. 28 black sheets, 5.75c. to 5.90c.; No. 28 galvanized, 7.25c.; No. 10 blue annealed, 5c. to 5.75c.

Sheets.—Some of the independent mills have reduced prices on automobile body sheets to 5.70c. for No. 22 gage, this price being based on the 4.35c. box annealed sheet price. Some sheet consumers are making efforts to secure lower prices than those of the American Sheet & Tin Plate Co. which are now generally quoted by independent mills, but apparently without success. While there are reports of price concessions, the lower prices are evidently being named by brokers on odd lots.

Old Material.—Prices have further declined on nearly all grades. There were further suspensions of shipments during the week and little scrap is now being taken by consumers, and this is limited mostly to scrap for blast furnaces. There is very little activity in the market. Trade between dealers has become very light, owing to the fact that consumers are not accepting shipments. Dealers have considerable unsold tonnage on their books, but will not cover on these short sales until mills release orders. Prices have reached levels at which dealers are making some purchases for yard stocks. Heavy melting steel has got down to around \$15, although \$16 is being offered for high grade material. A sale of 500 tons of machine shop turnings is reported at \$10.50 and compressed steel scrap has sold as low as \$10 at shipping point.

Dealers quote delivered at consumers' yards in Cleveland and vicinity, as follows:

Per Gross Ton	
Heavy melting steel	\$15.50 to \$16.00
Steel rails, under 3 ft.	19.00 to 20.00
Steel rails, rerolling	20.00 to 21.00
Iron rails	20.00 to 20.50
Iron car axles	35.00 to 36.00
Low phos. melting scrap.....	20.00 to 21.00
Cast borings	12.00 to 14.00
Machine shop turnings	9.50 to 10.50
Mixed borings and short turnings.....	12.00 to 14.00
Short turnings for blast furnaces.....	12.00 to 14.00
Compressed steel	10.75 to 11.25
Railroad wrought	18.00 to 19.00
Railroad malleable	20.00 to 21.00
Steel axle turnings	13.00 to 14.00
Light bundled sheet stampings.....	7.00 to 8.00
Drop forge flashings over 10 in.....	9.00 to 10.00
Drop forge flashings under 10 in.....	9.00 to 10.00
No. 1 cast	25.00 to 25.50
No. 1 busheling	11.00 to 12.00
Railroad grate bars	20.00 to 21.00
Stove plate	20.00 to 21.00
Cast iron car wheels	22.00 to 23.00
Pipes and flues	10.00 to 11.00

Coke.—Three producers are offering standard Connelville foundry coke at \$10 per net ton at oven for

the first half, but no business is being placed. For prompt shipment quotations range from \$8.50 to \$10 at oven.

Bolts, Nuts and Rivets.—The demand for bolts and nuts is light. Orders are limited to small lots from consumers who evidently have run out of certain sizes. Only a limited number of contracts are being placed for the first quarter. Local manufacturers are apparently adhering to the new prices that went into effect two weeks ago. The rivet market is very dull.

Philadelphia

PHILADELPHIA, Dec. 14.

Steel plants operations in the East are steadily diminishing and it is indicated that there will be a sharp decline in merchant pig iron output within the next 30 days. A number of furnaces, which are nearly to the end of the orders on which they can make shipments, will go out of blast, after piling a small amount of iron to take care of any orders in suspension which may be revived early in the new year. At a meeting of the Virginia pig iron producers last week, it developed that out of 15 furnaces in that State only five or six will still be in blast on Jan. 1. Almost no business of any kind is being done in this market. The situation was described by a steel man as the quietest period in five years.

Naturally, thought is being given to conditions under which a resumption of activity will become possible, and in this connection a reduction of steel mill wages is known to be under serious consideration by some Eastern companies.

Pig Iron.—Within the past week, Eastern furnaces have come more openly in the market for business as they are nearing the end of their orders on which shipments can be made. Two or three furnaces have made small sales on the basis of \$35, furnace, but this is \$3 a ton above the price at which resale iron has been sold. Most of the current transactions are single carloads, and the aggregate of these is very small. Virginia producers have reduced their price on foundry iron to \$42, base, furnace, but as Virginia resale iron is available at \$38, furnace, few, if any, sales are being made by the furnaces. Several of the Virginia furnaces will go out of blast within the next week or two. It is predicted that a number of eastern Pennsylvania furnaces will go out also within the next 30 days. Among the sales of the past week was one lot of 100 tons of copper bearing low phosphorus iron at \$45, furnace. A leading maker of copper free low phosphorus iron names a nominal price of \$51, furnace. We revise our quotation on basic iron to \$33.86, delivered, in line with a recent transaction involving 1500 tons.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace.

East Pa. No. 2 plain, 1.75 to 2.25 sil.	\$33.54 to \$36.54
East Pa. No. 2X, 2.25 to 2.75 sil.	34.79 to 37.79
Virginia No. 2 plain, 1.75 to 2.25 sil.	43.74 to 47.74
Virginia No. 2X, 2.25 to 2.75 sil.	44.99 to 48.99
Basic deliv. Eastern Pa.	33.86
Gray forge	39.00 to 40.00
Standard low phos. (f.o.b. furnace)	51.00
Malleable	42.46 to 45.40
Copper bearing low phos. (f.o.b. furnace)	45.00

Ferroalloys.—There is no business and prices are nominal. Resale ferromanganese is available at \$125 to \$135, seaboard, and domestic producers' quotations remain at \$150, seaboard. Spiegeleisen is available at about \$60, furnace.

Semi-Finished Steel.—An Eastern company sold 600 tons of open hearth rerolling billets last week at \$50, Pittsburgh. Otherwise the market is extremely quiet.

Finished Steel.—There is almost no demand for plates, shapes and bars. Current business is made up of small lots, frequently less than carloads, on which some of the Eastern mills are able to get prices higher than would be quoted on good-sized lots. On plates in small lots 2.85c. and 2.90c., Pittsburgh, has been

paid. One Eastern maker of bars quotes 2.50c., Pittsburgh, and has sold small lots at this price. We quote plates at 2.65c., shapes at 2.45c., and bars at 2.35c., f.o.b. Pittsburgh.

Bar Iron.—Some mills are now selling on the basis of 3.50c., Pittsburgh, a reduction of \$10 a ton from recent quotations, and a total reduction of \$20 a ton from the peak price. This price applies to ½-in. rounds and squares and flats ¼ in. and heavier. On the 3.50c. base, other prices are as follows: Flats wider than 6 in., 3.80c.; ¾ and 7/16 rounds and squares, 4.20c.; bands, 4.50c.; ¼ and 5/16 rounds and squares, 5c., all Pittsburgh.

Warehouse Business.—Local warehouses announce further reductions on some items. Prices quoted are as follows:

Soft steel bars and small shapes, 3.70c.; iron bars (except bands), 4.50c.; round edge iron, 4.80c.; round edge steel, iron finish, 1½ in. x ½ in., 4.00c.; round edge steel, planished, 4.75c.; tank steel plates, ¼-in. and heavier, 4.00c.; tank steel plates, 3/16-in., 4.40c.; blue annealed steel sheets, No. 10 gage, 5.15c.; light black steel sheets, No. 28 gage, 7.50c.; galvanized sheets, No. 28 gage, 9.00c.; square twisted and deformed steel bars, 3.90c.; structural shapes, 3.80c.; diamond pattern plates, 6.00c.; spring steel, 7.50c.; round cold rolled steel, 5.35c.; squares and hexagons cold rolled steel, 5.85c.; steel hoops, No. 13 gage and lighter, 5.50c.; steel bands, No. 12 gage to 3/16-in. inclusive, 4.65c.; iron bands, 5.50c.; rails, 4.00c.; tool steel, 16.00c.; Norway iron, \$12.00c.; toe steel, 6.00c.

Old Material.—The market continues extremely quiet. There have been numerous cancellations of contracts for borings and turnings, due to the fact that brokers have been unable to procure sufficient quantities of these grades of scrap to complete their contracts. The greatly curtailed operations in machine shops have reduced the available supply of borings and turnings to a point that makes dealers fear that when consumption is resumed there will not be for some time a sufficient supply to meet the demand. Further price reductions on some items are noted this week. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$16.00 to \$16.50
Steel rails, rerolling	27.00 to 20.50
No. 1 low phos., heavy 0.04 and under	24.00 to 25.00
Car wheels	27.00 to 27.50
No. 1 railroad wrought	20.00 to 21.00
No. 1 yard wrought	17.00 to 18.00
No. 1 forge fire	14.50 to 15.00
Bundled skeleton	14.50 to 15.00
No. 1 busheling	18.00 to 19.00
No. 2 busheling	14.00 to 15.00
Turnings (short shoveling grade for blast furnace use)	14.00 to 14.50
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine-shop turnings (for rolling mill and steel works use)	14.00 to 14.50
Heavy axle turnings (or equivalent)	15.00 to 16.00
Cast borings (for rolling mills)	17.00 to 18.00
Cast borings (for chemical plants)	19.00 to 20.00
No. 1 cast	26.00 to 27.00
Railroad grate bars	22.00 to 22.50
Stove plate (for steel plant use)	20.00 to 20.50
Railroad malleable	18.00 to 19.00
Wrought iron and soft steel pipes and tubes (new specifications)	17.00 to 18.00
Iron car axles	30.00 to 31.00
Steel car axles	25.00 to 26.00

Birmingham

BIRMINGHAM, ALA., Dec. 14.

Some inquiries for delivery over the first half were received during the week, amounts represented not exceeding 1000 tons in any instance. The largest interests quoted \$42, assigning as reason that this was as good as any without the showing of a real buying movement. The producer openly quoting \$38 placed an order for 100 tons for Louisville at that base and a car lot was sold by another on \$40 base. Any large business, it is believed, would be taken by any at \$38. Operations of the Tennessee company remain more extensive in its iron department than at any time during the year. Pig iron production lately has been running at a rate in excess of 94,000 tons per month, which is in excess of October, September and November. Finished steel production is at the rate of 66,000 tons monthly, which is full normal. This interest is piling up huge stacks of coal secured from the Woodward Iron Co. and others during their slowing down besides mining its full quota. The Gulf States Steel Co. is

scheduled to close down its open hearth department for two weeks effective Dec. 17 and its wire mill one week effective Dec. 23, the blast furnace remaining in operation. The Sloss-Sheffield company continues to operate four stacks, but, if conditions do not improve soon, one will go out. The Central Coal & Iron Co. is enlarging the size of its stack at Holt during the shut down. The independent steel works are not in receipt of any respectable amount of new business. Sales agents have returned from trips over Georgia, the Carolinas and other Southern States with practically no orders for steel of any kind. Orders for nails are coming in in quantities to the leading interest. Exports of steel products are flowing to Gulf ports from the Corporation mills at the rate of 12,000 to 15,000 tons per month. Charcoal iron was reduced to \$50 and sales are made with some regularity. We quote per gross ton f.o.b. Birmingham district furnaces as follows:

We quote per gross ton f.o.b. Birmingham district furnaces, the Tennessee company included, as follows:

Foundry, sil. 1.75 to 2.25.....	\$38.00
Basic	37.00
Charcoal	50.00

Cast Iron Pipe.—There is no new business outside of very small fill-in lots, but prospect of an 8000-ton order from California is held out. A shipload of 2500 tons for the Pacific Coast is about to move from Mobile. In the absence of new business, quotations are unchanged from the base of \$70 and \$74.

Coal and Coke.—Coal production has finally reached the normal and exceeded it, the production having gotten to 302,000 tons last week. Strikers, however, stand firm, with ample support of the international union. It is hoped to be able to withdraw militia from the field when the Supreme Court settles the eviction suits and the company houses are returned. Troop maintenance is costing \$50,000 to \$60,000 per month. The strike and production have no longer any relation, it being an endurance contest as to recognition of the union.

Pig Iron Stocks.—Iron stocks on Alabama yards on Dec. 1 were 90,000 tons of foundry compared with 71,000 on Oct. 1; 1700 tons of machine cast compared with 2500; 100 tons of warrants compared with 1600 and 8000 tons of basic compared with 7600. Total accumulations Dec. 1 were 100,000 tons compared with 81,000 Nov. 1 and 72,000 Oct. 1. The net increase of 19,000 tons was an agreeable surprise, a larger increase having been expected.

Old Material.—All prices in the scrap market are regarded as nominal and it is difficult to get any dealers to quote, their answer being that there is no price because nothing is being done.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

Old steel rails.....	\$17.00 to \$18.00
No. 1 heavy steel.....	16.00 to 17.00
No. 1 cast.....	27.00 to 28.00
Car wheels.....	27.00 to 28.00
Tramcar wheels.....	25.00 to 26.00
No. 1 wrought.....	21.00 to 22.00
Stove plate.....	14.00 to 15.00
Cast iron borings.....	7.00 to 8.00
Machine shop turnings.....	7.00 to 8.00

Cincinnati

CINCINNATI, Dec. 14.

Pig Iron.—An inquiry for 2200 tons of various grades of foundry and malleable iron from a northern Ohio melter was received during the week. There is a disposition on the part of some sellers to treat the inquiry in the nature of a "feeler" and so far as can be learned no quotations have yet been made by furnaces. It is understood, however, that some of them will quote \$35, furnace base. An inquiry for 500 tons of foundry iron is also being figured on. Sales in this territory during the week consisted almost entirely of carload lots of resale iron. One Southern furnace disposed of approximately 1000 tons of off iron, now lying in its yard, to a melter in the Birmingham district at \$37, Birmingham. It is reported that a big manufacturing concern in this district has disposed of considerable resale iron to an Indiana melter at a price averaging \$40 f.o.b. its plant. Included in the list were various grades analyz-

ing from 1.75 to 8 per cent silicon. Conflicting reports are in circulation as to whether a Detroit furnace sold iron on a \$30 furnace base and some dealers who offered orders to this furnace at \$32 and \$33 were turned down with the statement that this iron would not be sold at less than \$35. The selling agency that was supposed to have offered this iron stated that it did not make any sales at the \$30 figure. Resale iron continues to dominate the market and as many sales are being made that do not become public, it is difficult to get definite information as to prices. The lowest authentic resale price reported on Northern foundry iron is \$32. While no furnace sales of Northern iron have been made on which to base quotations, it is practically certain that on a firm inquiry \$35, Ironton, would be named and for this reason a higher quotation does not seem justified. On malleable iron, carload sales are reported at \$37 furnace. Basic is quoted by furnaces at \$35 with resale \$2 less. Southern furnaces continue to quote \$38 Birmingham, but resale iron is available in limited tonnages at \$34. The Marting Iron & Steel Co. blew out one stack last week, leaving three furnaces operating in the Ashland-Ironton district. The lower figures in the quotations below represent resale prices and the higher figures furnace prices.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base price)	\$38.50 to \$42.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	39.75 to 41.75
Ohio silvery, 8 per cent sil.....	52.52 to 57.52
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	34.52 to 37.52
Basic northern	35.52 to 37.52
Malleable (nominal)	40.52 to 42.52

Finished Material.—Independent steel companies who recently reduced prices to the Steel Corporation level report that as a result they have been able to pick up a fair amount of orders. While there has been no heavy covering, consumers who had been holding off with the expectation of securing lower quotations have come into the market in a small way, and the aggregate tonnage booked during the past two weeks has been entirely satisfactory in view of the prevailing conditions. Bars, plates, bolts and spikes in moderate tonnages have been in fair demand, and most of the sales recorded have been of these products. The sheet market is quiet, and while all the mills are offering sheets at the Steel Corporation price, very little interest is being manifested. Some inquiries for wire products are being received, and while some independents are quoting the same prices as the American Steel & Wire Co., they are not actively soliciting orders, as the claim is made that wire products cannot be manufactured and sold at a profit at the March 21 price. The structural market is very quiet, no awards being reported during the week. Most of the steel mills operating in the southern part of the State are running about 50 per cent of normal capacity. It is understood that many of them will shut down entirely for the holidays, and that unless business improves the shut-down will be for an indefinite period. Local warehouses continue to report a fair business. Prices have again been revised, and jobbers are now quoting:

Iron and steel bars, 3.58c. base; shapes, 3.68c. base; hoops and bands, 3/16 in. and lighter, 4.28c.; plates, 3.88c. base; reinforcing bars, 3.65c.; cold rolled rounds, 1½ in. and over, 5.20c.; under 1½ in. rounds, and flats, squares and hexagons, 5.70c.; No. 10 blue annealed sheets, 4.78c. base; 28-gage black sheets, 7c. base; 28-gage galvanized sheets, 8c. base; wire nails, \$4.50 per keg, base.

Coke.—Coke prices cover a wide range. Connells-ville furnace coke is quoted at \$6 to \$8 and foundry \$8 to \$10. Wise County furnace coke is quoted at \$9 and foundry at \$11. New River foundry ranges from \$11 to \$13.50, sales being reported at both figures.

Old Material.—The scrap market is stagnant. Prices are still on the down grade and dealers who were in the market last week buying against contracts were able to fill their requirements at prices \$1 to \$8 below previous nominal levels. Some steel plants have shut off shipments and are rejecting materials that do not strictly meet specifications. The following revised prices are representative of those ruling in the local market to-day, but are subject to variations either way of 50c. to \$1 a ton.

We quote dealers' buying prices:

Per Gross Ton	
Bundled sheets	\$8.50 to \$9.50
Old iron rails	19.50 to 20.50
Relaying rails, 50 lb. and up	45.50 to 46.50
Rerolling steel rails	17.50 to 18.50
Heavy melting steel	12.50 to 13.50
Steel rails for melting	13.50 to 14.50
Car wheels	22.50 to 23.50

Per Net Ton	
No. 1 railroad wrought	14.50 to 15.50
Cast borings	7.50 to 8.00
Steel turnings	5.00 to 5.50
Railroad cast	21.50 to 22.50
No. 1 machinery	22.50 to 23.50
Burnt scrap	10.50 to 11.50
Iron axles	30.00 to 30.50
Locomotive tires (smooth inside)	16.00 to 17.00
Pipes and flues	9.50 to 10.00
Malleable cast	13.50 to 14.00
Railroad tank and sheet	9.50 to 10.00

Boston

BOSTON, Dec. 14.

Pig Iron.—The Crane Co., Bridgeport, Conn., has asked for bids on 1000 tons silicon 1.75 to 2.25, and 1000 tons silicon 2.25 to 2.75, delivery over the rest of 1920. Aside from this inquiry and scattered transactions in car lots of resale iron, the market is dull. Resales include a car of Virginia, silicon 2.25 to 2.75, at \$39 furnace, or a basis of \$37.75 for silicon 1.75 to 2.25, and another car No. 2 X at \$40.25 delivered, or a basis of \$32.42 furnace for silicon 1.75 to 2.25; a car of Buffalo No. 1 X at between \$40.50 to \$41 delivered, or a basis of \$32.50 furnace for silicon 1.75 to 2.25; and a car of eastern Pennsylvania No. 2 X at \$40.25 delivered, or a basis of \$34.94 furnace for silicon 1.75 to 2.25. Furnaces as a rule are not trying to force sales, although Buffalo malleable has been offered in New England, according to report, at less than \$40 delivered. Most furnaces doing business in this section of the country will carry over into 1921 a considerable tonnage of contract iron. It generally is conceded that a turning point has been reached in the foundry industry inasmuch as prospective business is appearing in spots. Local delivered prices on resale iron follow:

East. Penn., silicon 2.25 to 2.75	\$40.31 to \$45.31
East. Penn., silicon 1.75 to 2.25	39.06 to 44.06
Buffalo, silicon 2.25 to 2.75	37.71 to 41.71
Buffalo, silicon 1.75 to 2.25	36.46 to 40.46
Virginia, silicon 2.25 to 2.75	40.33 to 45.33
Virginia, silicon 1.75 to 2.25	39.08 to 45.33
Alabama, silicon 2.25 to 2.75	47.91 to 49.91
Alabama, silicon 1.75 to 2.25	46.66 to 48.66

Coke.—The New England Coal & Coke Co., Boston, has reduced its price on spot foundry coke from \$19.20 delivered where the freight does not exceed \$3.40 a ton, or a \$15 Connellsville oven base, to \$16.70 delivered or a \$10.50 Connellsville base. It also has reduced its price on crushed coke from \$14 to \$12 f.o.b. ovens, Everett. The Providence Gas Co., Providence, R. I., has reduced its first half, 1921, minimum contract foundry coke price from a \$15.50 to a \$10 per net ton Connellsville base. In connection with this reduction the company states: "At the time price proposals for contracts over first half of the year 1921 were executed, the basis of price submitted was the best and lowest we could name, taking into consideration the numerous contingencies which we were facing. Since then, changes have come about, and prices for coal have become more settled, whereby we are in a position to revise the minimum basis of price." Some foundries closed on first half, 1921, Everett coke following the above announcement, but a large tonnage remains uncovered. Many foundries have considerable fuel on hand, but little business, consequently are in no hurry to commit themselves to a contract.

Finished Material.—Local representatives of steel mills have taken little tonnage so far this month, the total sales in individual cases usually involving not more than three figures. They report requests for cancellations and repriced contracts are still in order, but there is less inclination to grant the former. Warehouses are doing comparatively little business in iron and steel, and prices are generally reported as barely steady. Jobbing quotations on bolts and nuts have again been revised downward, and coach screws are cheaper. Most houses quote structural rivets at \$7.15 per keg base, whereas a week ago there was a spread

of \$1 upward. Small iron rivets are 10 per cent lower, being quoted 30 per cent discount. The market for brass rods is 1c. per lb. lower, the mill price being 18c. lb. base, the lowest price quoted in years. The Lukinheimer Co. line of pipe fittings is down all of 15 per cent.

Jobbers now quote: Soft steel bars, \$3.70 per 100 lb. base; flats, \$4.50 to \$4.85; concrete bars, \$4 to \$4.25; tire steel, \$5 to \$5.50; spring steel, open hearth, \$8.50; crucible, \$14; steel bands, \$4.65 to \$6.25; steel hoops, \$6; toe calk steel, \$7; cold rolled steel, \$5.50 to \$9.50; structural, \$3.70 to \$5.50; plates, \$4 to \$4.40; No. 10 blue annealed sheets, \$5.90; No. 28 black sheets, \$8.15; No. 28 galvanized sheets, \$9.50; refined iron, \$4.65 to \$5.65; best refined, \$5.50; Wayne, \$8.50; band iron, \$4.65; hoop iron, \$6; Norway, \$15.

Old Material.—Going business is confined to scattered buying by dealers against old contracts, involving only a few kinds of old material. A slump in the demand for cast iron borings has resulted in a drop of \$4 to \$5, those used for chemical purposes showing the greatest weakness. Dealers' ideas on wrought pipe, railroad and rerolling rail values also are very much lower, the call for them having passed. As compared with a week ago, the market for these materials is \$2 to \$4 lower. The market on machinery cast is steadier, being influenced by a scarcity of offerings and intimations from certain foundries that purchases will be made soon after the turn of the new year. The feeling as regards stove plate also is better, although in the absence of actual business there is little opportunity for prices to change. Prices on old materials as quoted at the local yards follow:

No. 1 heavy melting steel	\$11.00 to \$12.00
No. 1 railroad wrought	19.00 to 20.00
No. 1 yard wrought	16.00 to 17.00
Wrought pipe (1-in. in length, over 2 ft. long)	9.50 to 10.50
Machine shop turnings	9.50 to 10.00
Cast iron borings, rolling mill	10.00 to 11.00
Cast iron borings, chemical	11.00 to 12.00
Heavy axle turnings	9.50 to 10.00
Blast furnace borings and turnings	8.00 to 9.00
Forged scrap	9.50 to 10.00
Bundled skeleton	9.50 to 10.00
Street car axles, steel	20.00 to 21.00
Car wheels	29.00 to 30.00
Machinery cast	27.00 to 28.00
No. 2 cast	24.00 to 26.00
Stove plate	19.00 to 20.00
Railroad malleable	19.00 to 20.00
Rerolling rails	18.00 to 19.00

Buffalo

BUFFALO, Dec. 14.

Pig Iron.—Some improvement is noted in the volume of inquiry but actual orders are still few. Furnace operation is still about 60 per cent of normal. All furnaces have adopted a \$40 base price, for furnace iron. About 600 tons of foundry iron was sold at \$35 base and some of this went at even less. Fifty tons of No. 2X iron was sold at \$39.25. There seems to be a general feeling that improvement will begin shortly after the first of the year. An inquiry for 500 tons is noted. One furnace which declined to cut prices has not done any business.

We quote f.o.b. Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 sil.	\$39.25 to \$41.00
No. 2 X foundry, 2.25 to 2.75 sil.	36.25 to 39.25
No. 2 plain, 1.75 to 2.25 sil.	35.00 to 38.00
Basic	36.00
Malleable	35.00 to 36.00
Lake Superior charcoal	55.00

Finished Iron and Steel.—Some inquiry developed during the week, but in most instances it concerned material figured some time ago and the inquirers, it is believed, are only trying to learn present prices. Mill operation is unchanged. One interest stated no new orders have been received and inquiry was very light. Another interest was more hopeful and said its mill would roll 50,000 tons of rails within the month of December. This same interest said individual rail tonnages were small but small orders were being booked daily. The independent price is \$57. One fabricator said a number of jobs involving moderate tonnages were being talked of, but these were all vague and nothing definite was at hand. The Statler Hotel interests have announced they will do nothing at present. They believe prices are at their highest point and have put off awarding the contracts for their new hotel until March. Some orders for shapes are noted. These vary in size and while one involved 2500 tons another was for 50

tons. Fabricators' stocks are low and some flurry may come when these will be partially replenished after January. An emergency order for bars was filled at 2.75c.

We quote prices f.o.b. Buffalo as follows: Structural shapes, \$3.60; plates, \$3.80; plates, No. 8 gage, \$4.90; soft steel bars and shapes, \$3.50; hoops, \$4.70; blue annealed sheets, No. 10 gage, \$5.40; galvanized steel sheets, No. 28 gage, \$8.50; black sheets, No. 28 gage, \$7.

Coke.—The demand is poor. A price of \$10 on foundry is maintained. Furnace coke is bringing \$7 to \$8.

Old Material.—The market is at an absolute standstill. No sales are reported or inquiries are made. Prices have not changed. Some dealers are optimistic with respect to a resumption of business after the first of the year, but other observers say there is nothing on which to base such expectations.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo as follows:

Heavy melting steel, regular grades	\$18.00 to \$19.00
Hydraulic compressed	16.00 to 17.00
Low phos., 0.04 and under	29.00 to 30.00
No. 1 railroad wrought	24.00 to 25.00
No. 1 machinery cast	30.00 to 31.00
Iron and steel axles	35.00
Car wheels	30.00 to 31.00
Railroad malleable	21.00 to 22.00
Machine-shop turnings	12.00 to 13.00
Heavy axle turnings	17.00 to 18.00
Clean cast borings	15.00 to 16.00
Iron rails	27.00 to 28.00
Locomotive grate bars	17.00 to 18.00
Stove plate	20.00 to 21.00
Wrought pipe	14.00 to 15.00
No. 1 busheling	15.00 to 16.00
Bundled sheet stampings	11.00 to 12.00

Chicago

CHICAGO, Dec. 14.

Apathy characterizes the market in all departments. The downward swing of prices is less rapid than heretofore and in some commodities has apparently reached a standstill. Production continues to diminish as order books shrink. The foremost independent steel interest expects to have all of its capacity idle by the end of the week with the exception of its blast furnaces and sheet mills. The Interstate Iron & Steel Co. will soon be forced to close its steel plant, while its wire plant is commencing to curtail operation and its bar iron mill has enough business ahead to run until the close of the year. All the rail carbon steel bar mills are inactive. Merchant blast furnace operation is unchanged. One change for the better is to be noted, namely, the blowing in of one more furnace by the Illinois Steel Co., making a total of 22 active furnaces out of its 29 in this district.

The \$100,000,000 export corporation, which was organized in Chicago last week to finance foreign trade, is regarded as a possible means for restoring business activity, particularly because present reaction in trade is recognized as being due, in large part, to the cessation of exports. The plan is sponsored by some of the best brains of the country.

As was expected, the Steel Corporation has written into 1921 contracts its previous prices on rails and track fastenings.

Pig Iron.—A Detroit producer is offering about 10,000 tons of foundry on the open market without setting any definite base price. In this territory, this maker has thus far disposed of two cars of higher silicon iron at \$31, base, furnace, the equivalent of \$34.50, Chicago, for No. 2 foundry. A larger tonnage of higher silicon foundry is reported to have been sold in another market on the basis of \$30 base, Detroit. Resale material is still to be had at varying prices, the lowest quotation reported here being \$34, base, Chicago. There are few inquiries and little buying. An Eastern furnace has taken an order for 500 tons of copper bearing low phosphorous, but the price paid by the purchaser has not been ascertained. An inquiry for 200 tons of malleable for prompt shipment is be-

fore the trade. With resale iron playing such an important part in the market, at least potentially, a wide range of quotations is reported. A car of resale silvery, 7 per cent, changed hands at \$48, delivered Chicago, but this transaction is hardly to be regarded as indicating the general level of resale prices on this material. In the South, furnace quotations show further weakness, one maker now naming \$37, base, Birmingham, for foundry. Bee Hive foundry coke of good quality is now available for prompt shipment at \$8.75, Connellsville.

The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorous, which are f.o.b. furnace and do not include a switching charge averaging 70c. per ton.

Lake Superior charcoal, averaging sil.	
1.50 1921 delivery (producers' price, deliv. at Chicago)	\$53.50
Lake Superior charcoal, prompt shipment (resale)	51.00
Northern coke, No. 1, sil. 2.25 to 2.75	\$36.25 to 39.25
Northern coke foundry, No. 2, sil. 1.75 to 2.25	35.00 to 38.00
Northern high phos.	35.00 to 38.00
Southern coke, No. 1 foundry and No. 1 soft, sil. 2.75 to 3.25	45.67 to 47.67
Southern coke, No. 2 foundry, sil. 2.25 to 2.75	43.92 to 45.92
Southern foundry, sil. 1.75 to 2.25	42.67 to 44.67
Malleable, not over 2.25 sil.	35.50 to 38.50
Basic	35.00 to 38.00
Low phos. Eastern furnace (copper free)	47.00 to 49.00
Silvery, 7 per cent.	52.32

Ferroalloys.—Resale ferromanganese is reported to have been offered at as low as \$105, seaboard, but in general quotations range from \$125 to \$150, delivered. One furnace is now quoting \$140, tidewater. Spiegel-eisen is weaker and can be had in resale lots at from \$50 to \$55, f.o.b. shipping point. The lowest producer's quotation reported is \$72, furnace.

We quote 75 to 80 per cent ferromanganese; resale, \$125 to \$150, delivered, 50 per cent ferrosilicon at \$80 to \$85, delivered; spiegeleisen, 18 to 22 per cent, resale, \$50 to \$55, f.o.b. shipping point.

Rails and Track Supplies.—As was anticipated, the Steel Corporation is writing into its 1921 contracts its previous prices on rails and track supplies. On standard mill specifications, no new extras are named. On American Railway Engineering Association 1914 rail specifications the Corporation has fixed an extra of \$1.60 per ton for nick and break test, and on A. R. E. A. 1920 specifications total extras of \$11.80 a ton for nick and break test, check analysis and discard. Most rail contracts call for either mill specifications or a combination of the mill and 1914 A. R. E. A. specifications. The 1920 A. R. E. A. specifications are so new that few contracts call for them. The size of the extra was necessitated by increased costs involved in making the elongation or ductility test called for by the specifications. The contracts for rails which are now being finally closed by the Illinois Steel Co. involve 850,000 tons and in addition 150,000 tons will be carried over from this year to 1921.

Standard Bessemer rails, \$45 to \$55; open-hearth rails, \$47 to \$57. Light rails, 2.45c. to 3c., f.o.b. makers' mills. Standard railroad spikes, 3.65c., Pittsburgh. Track bolts with square nuts, 4.60c., Pittsburgh. Steel tie plates, 3c. and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron (nominal), 3.75c. f.o.b. makers' mills.

Wire Products.—Demand is gradually tapering off and with backlogs steadily diminishing it would not be surprising if independents in this district would follow the lead of the Jones & Laughlin Steel Co. in meeting the Steel Corporation prices. Wire nails stand out as the most sought after commodity. The plants of the leading interest continue to operate full. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1645.

Bars.—The market is quiet in all departments. All the rail carbon steel bars mills in this territory are idle and the quotations below are to be considered nominal. Bar iron mills are fast running short of work and owing to the paucity of new inquiry, few prices are being named. Quotations which have been made indicate that both Chicago and Pittsburgh mills are asking less outside their respective districts than they are in home

markets. A Chicago maker has named 3.63c., delivered Pittsburgh, on inquiries from the East, while an Eastern mill has quoted 3.38 c., Chicago, on Western business. A few small orders have been booked by a local maker at 3.50c., Chicago. Because of the light demand, appended bar iron quotations are to be considered nominal.

Mill prices are: Mild steel bars, 2.35c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 3.25c. to 3.50c. (nominal), Chicago; rail carbon, 2.75c. to 3c. mill.

Jobbers quote 3.48c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.25c. for rounds and 5.75c. for flats, squares and hexagons, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. on orders up to 1000 lb. Jobbers quote hard and medium deformed steel bars at 3.48c. base.

Plates.—A Duluth shipbuilder is in the market for 1800 tons of plates, shapes and bars. The Louisville & Nashville, which recently purchased 2000 hopper cars, is reported to be now asking for figures on 2500 additional cars of the same type, involving 25,000 tons or more of steel. Among equipment inquiries still active, 300 gondola cars wanted by the Cincinnati, Indianapolis & Western will require 3000 tons of plates, shapes and bars. The Gulf Coast lines have let 300 gondola cars to the Mount Vernon Mfg. Co. The steel, amounting to about 3000 tons, will be furnished by the leading interest. The aggregate demand for plates is small.

The mill quotation is 2.65c. Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.78c. for plates out of stock.

Structural Material.—A local mill, quoting close to the Industrial Board price, lost an order of 5000 tons of structural shapes for the Dutch East Indies to a mill abroad. Domestic demand for structural material continues light with fabricating business still characterized by few lettings. Six hundred and twenty tons for the Union Liberty Furnace building, Chicago, has been let to the Oscar Daniels Co., erector, which in turn is understood to have awarded the fabrication to the American Bridge Co. The Chicago, Indianapolis & Louisville has awarded 352 tons for a freight car repair shop, Lafayette, Ind., to the Indiana Bridge Co., Muncie, Ind.

The mill quotation is 2.45c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.58c. for materials out of warehouse.

Sheets.—The market is quiet and most mills are adhering to the Industrial Board basis, although a few Ohio makers are reported to be quoting f.o.b. Youngstown instead of f.o.b. Pittsburgh.

Mill quotations are 4.35c. for No. 28 black; 3.55c. for No. 10 blue annealed, and 5.70c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 4.68c.; No. 28 black, 5.73c. to 6c.; No. 28 galvanized, 7.35c.

Bolts and Nuts.—The market is quiet and the price situation is unchanged. For manufacturers' prices, see finished iron and steel, f.o.b. Pittsburgh, page 1645.

Jobbers quote structural rivets, 5.08c.; boiler rivets, 5.18c.; machine bolts up to $\frac{3}{4}$ x 4 in., 40 per cent off; larger sizes 30 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 25 off; larger sizes, 25 off; hot pressed nuts, square tapped and hexagon tapped, 35 off; blank nuts, 85 off; coach or lag screws, gimlet points, square heads, 45 per cent off. Quantity extras are unchanged.

Cast Iron Pipe.—There is little pending business and in the absence of buying it is difficult to ascertain going prices. It seems likely that pipe makers will reduce their official quotations, bringing them in line with concessions which have been made on individual jobs.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$78.10 to \$79.10; 6-in. and above, \$73.10 to \$74.10; class A and gas pipe, \$4 extra.

Old Material.—Buying is restricted and while further price recessions have taken place, a number of quotations have remained stationary. Consumers are following a cautious course, buying a few cars now and then to feel out the market. One user purchased five cars of No. 1 wrought at \$14 per net ton. Additional railroad lists have appeared: The Northern Pacific offers 3000 tons, the St. Paul 1800 tons, the Père Marquette 1300 tons, the Omaha 1200 tons, the Monon 800

tons, the Chicago Great Western and the Pullman Co. 200 tons each, and the Michigan Central a blind list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$27.00 to \$27.50
Relaying rails	40.00 to 45.00
Car wheels	24.00 to 24.50
Steel rails, rerolling	17.00 to 17.50
Steel rails, less than 3 ft.	18.00 to 18.50
Heavy melting steel	16.50 to 17.00
Frogs, switches and guards, cut apart	16.50 to 17.00
Shoveling steel	16.00 to 16.50
Low phos. heavy melting steel	20.00 to 20.50
Drop forge flashings	12.00 to 12.50
Per Net Ton	
Iron angles and splice bars	26.50 to 27.00
Steel angle bars	15.50 to 16.00
Iron arch bars and transoms	28.00 to 28.50
Iron car axles	32.50 to 33.00
Steel car axles	18.50 to 19.00
No. 1 busheling	14.00 to 14.50
No. 2 busheling	9.50 to 10.00
Cut forge	14.50 to 15.00
Pipes and flues	10.50 to 11.00
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	14.50 to 15.00
Steel knuckles and couplers	15.00 to 15.50
Coil springs	19.50 to 20.00
No. 1 cast	18.50 to 19.50
Low phos. punchings	17.50 to 18.00
Locomotive tires, smooth	11.50 to 12.50
Machine shop turnings	7.50 to 8.00
Cast borings	10.00 to 10.50
Stove plate	20.00 to 20.50
Grate bars	14.00 to 14.50
Brake shoes	11.00 to 11.50
Railroad malleable	15.00 to 15.50
Agricultural malleable	15.00 to 15.50
Country mixed	10.00 to 10.50

St. Louis

ST. LOUIS, Dec. 13.

Old Material.—The scrap market continues in the same state of dullness as has been reported previously. The lists out to close last week went, so far as bids were accepted, at extremely low prices, but there were a considerable number of cases where the material was not sold on the bids offered. The dealers are not inclined to take any chances and, in consequence, are not bidding seriously for material unless they have a real need to fill a contract or to meet the requirements for some special customer.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails	\$22.00 to \$22.50
Old steel rails, rerolling	17.00 to 17.50
Old steel rails, less than 3 ft.	16.00 to 16.50
Relaying rails, standard section, subject to inspection	35.00 to 40.00
Old car wheels	30.00 to 30.50
No. 1 railroad heavy melting steel scrap	14.00 to 14.50
Heavy shoveling steel	13.00 to 13.50
Ordinary shoveling steel	12.50 to 13.00
Frogs, switches and guards cut apart	14.00 to 14.50
Ordinary bundled sheet	8.00 to 8.50
Per Net Ton	
Heavy axle and tire turnings	8.00 to 8.50
Iron angle bars	22.00 to 22.50
Steel angle bars	14.00 to 14.50
Iron car axles	30.00 to 30.50
Steel car axles	20.00 to 20.50
Wrought arch bars and transoms	22.00 to 22.50
No. 1 railroad wrought	16.50 to 17.00
No. 2 railroad wrought	16.00 to 16.50
Railroad springs	13.50 to 14.00
Steel couplers and knuckles	15.50 to 16.00
Locomotive tires, 42 inches and over, smooth inside	12.50 to 13.00
No. 1 dealers' forge	11.00 to 11.50
Cast iron borings	8.00 to 8.50
No. 1 busheling	15.00 to 15.50
No. 1 boilers, cut to sheets and rings	9.00 to 9.50
No. 1 railroad cast scrap	18.50 to 19.00
Stove plate and light cast scrap	16.00 to 16.50
Railroad malleable	12.75 to 13.25
Agricultural malleable	12.75 to 13.25
Pipes and flues	10.50 to 11.00
Railroad sheet and tank scrap	8.00 to 8.50
Railroad grate bars	13.00 to 13.50
Machine shop turnings	5.00 to 5.50
Country mixed scrap	9.00 to 9.50
Uncut railroad mixed scrap	9.50 to 10.00
Horseshoes	16.50 to 17.00
Railroad brake shoes	13.00 to 13.50

Pig Iron.—As a result of the appearance of resale iron in the market, there is accumulating evidence that No. 2 Southern could be obtained, if there were any buyers, as low as \$32 per ton Birmingham, but because of the lack of need of iron there are no buyers at any price that would be likely to be made. None of the furnaces

represented in the St. Louis market are making any quotations, but are instructing their representatives to submit offers. However, none are being submitted and in consequence it cannot be ascertained from this means what prices the furnaces would accept.

Coke.—No business was transacted in coke during the week save in a car lot here and there and of no consequence as establishing a market. The prices made at present for best 72-hr. selected beehive oven coke is \$10 Connellsville, for both prompt and next year's delivery.

Finished Iron and Steel.—There has been no change in the finished products market and none is expected soon so far as activity of buying is concerned.

Soft steel bars, 3.57½c.; iron bars, 3.57½c.; structural material, 3.67½c.; tank plates, 3.87½c.; No. 10 blue annealed sheets, 4.77½c.; No. 28 black sheets, cold-rolled, one pass, 6.10c.; No. 28 galvanized sheets, black sheet gage, 7.45c.

IRON AND INDUSTRIAL STOCKS

Many New Low Record Prices Established During the Past Week

During the past week, the stock market turned reactionary and many new low quotations for the year were established. Much of the selling of securities was based on the reported industrial shut-downs, the laying off of employees, the wage cuts, the passing of dividends and the increasing commercial failures, but as heretofore, the present condition of the market to a very large extent can be traced to the slowness of money rates in receding from high levels due to frozen export loans and to frozen loans on grains and cotton. In the decline, good buying is overlooked, yet it is going on daily, especially in seasoned industrials and railroads.

Some of the steel and allied issues are selling all out of proportion to basic values and earnings. For instance, Bethlehem Steel has approximately \$45,000,000 cash and investment securities on hand, while the market value of the common stock is about \$30,000,000. The ratio of market value and liquid property value of the United States Steel Corporation properties is even more pronounced. Sloss-Sheffield during the past week has sold at prices yielding more than 11 per cent on the investment. All of the leading equipment common stocks are entirely out of alignment with property values, and in addition the 1921 business prospects of such concerns are daily improving. At one time, in a recent market, Pierce-Arrow preferred had a value of \$6,000,000, and at the same time the company's net quick assets were above \$14,000,000. Banking interests are of the opinion that the selling of securities has been overdone.

The range of prices on active iron and industrial stocks from Saturday of last week to Monday of this week was as follows:

Allis-Chalm. com. 29½ - 32	Lackawanna Stl. 51½ - 57
Allis-Chalm. pf. 72 - 75	Lake Sup. Corp. 8½ - 9½
Am. Can. com. 23¾ - 26½	Midvale Steel 31 - 33
Am. Can. pf. 79 - 81	Nat-Acme 28¾ - 29
Am. C. & F. com. 123¾ - 127	Nat. E. & S. com. 48¾ - 51
Am. C. & F. pf. 108½ - 110½	N. Y. Air Brake 82 - 85
Am. Loco. com. 82½ - 86¾	Nova Scotia Steel 35¾ - 37¾
Am. Loco. pf. -101	Pittsburgh Stl. pf. 84¼ - 84¾
Am. Rad'tor com. -67	Press. Steel pf. 80¾ - 84
Am. St. Fds. com. 31¾ - 33¾	Ry. Stl. Spg. com. 83½ - 86½
Am. Stl. Fds. pf. -83	Ry. Stl. Spg. pf. 100¼ - 102¼
Bald. Loco. com. 88¾ - 97¾	Replogle Steel 69½ - 72
Bald. Loco. pf. 94¼ - 94½	Republic com. 63¾ - 68¾
Beth. Steel com. 51 - 56¾	Republic pf. 90 - 91
Beth. Stl. Cl. B. 52 - 56¾	Sloss, com. 50¾ - 53½
Beth. Stl. 8% pf. 101¾ - 104¾	Superior Steel 42¾ - 43¾
Case, J. I. pf. 83 - 83¾	Trans-Williams 38¾ - 40¼
Chic. Pneu. Tool. 65 - 69¾	Un. Alloy Steel 31¾ - 32¾
Colo. Fuel 28 - 30	U. S. Pipe com. 12 - 12¾
Cruc. Steel com. 86¼ - 99	U. S. Pipe pf. 41¾ - 42
Cruc. Steel pf. 85 - 85½	U. S. Steel com. 79¼ - 83¼
Gen. Electric 118 - 129½	U. S. Steel pf. 106¼ - 107¼
Gt. No. Ore cert. 25¼ - 30	Vanadium Steel 39¼ - 45
Gulf States Steel 30 - 35½	Va. I. C. & Coke 87 - 90
Int. Har. com. 94¾ - 98½	Westgh. Elec. 41 - 43
Int. Har. pf. 102¾ - 103	

At a meeting of Follansbee Bros. Co., Pittsburgh, Dec. 8, a resolution of the directors increasing the capital stock from \$4,000,000 to \$11,000,000 was approved. This action represented the capitalization of the surplus of the company.

British Iron and Steel Market

Cancellations of Shipbuilding Contracts—Tin Plates Weak—Billets and Pig Iron from Continent (By Cable)

LONDON, ENGLAND, Dec. 13.

The pig iron market is unchanged and Cleveland producers are offering to sell No. 3 foundry iron for export at 247s 6d, although the embargo is not officially removed. Buyers are not keen because Belgian foundry iron is offered at 200s, c. i. f., United Kingdom. There is still a shortage of hematite iron for early delivery but makers are offering iron for next year's delivery at current rates. Some consumers have covered their requirements up to June but most of them are holding off. Export trade is stagnant, owing to the adverse exchange situation.

Bar iron has been reduced to £27 10s and a reduction in hoops is expected shortly. Otherwise steel prices are unchanged and but little business is moving.

There have been further cancellations of shipbuilding contracts reported, including one on the Clyde for four 10,000-ton steamers for Belgian owners. Former enemy ships are obtainable at £8 per ton less than the present cost of construction.

The tin plate market is weak, makers refusing to sell pending further meetings to discuss the fixing of a minimum price. Merchant sales have been made at 36s, basis, for prompt shipment. A recent inquiry for oil plates has been placed in the United States. The galvanized sheet market is easy.

Continental billets have sold at £13, delivered Birmingham, and merchant bars are now £14 f. o. b.

We quote per gross ton except where otherwise stated, f. o. b. maker's works, with American equivalent figured at \$3.46 for £1, as follows:

Ship plates	£26 0 to £30 0	\$89.96 to \$103.80
Boiler plates	30 0 to 35 0	103.80 to 121.10
Tees	25 0 to 27 0	86.50 to 93.42
Channels	24 5 to 26 5	83.90 to 90.82
Beams	24 0 to 26 0	83.04 to 89.96
Round bars, ¾ to 3 in.	26 10 to 29 10	91.69 to 100.87
Rails, 60 lb. and up.	25 0 to 27 0	86.50 to 93.42
Billets	15 10 to 16 10	53.63 to 57.09
Sheet and tin plate bars		
Welsh	16 0 to 17 10	55.36 to 60.55
Galvanized sheets, 24 g.	30 0 to 32 0	103.80 to 110.72
Black sheets, 24 g.	34 10	119.37
Tin plate base box	1 17	6.40
Steel hoops	34 0	117.64
Cleveland basic iron	11 15	39.65
West Coast hematite	15 15	54.49
Cleveland No. 3 foundry	12 7½	43.80
Ferromanganese	35 0 to 38 0	121.10 to 131.48
Coke	3 2¾	10.85

Continental Competition an Important Factor—Business at a Standstill

LONDON, ENGLAND, Nov. 30.—The trade position here is by no means happy. Unemployment increases and, though all the markets have been flat and the prices of most commodities show drastic reductions so far as market quotations go, the worker finds as yet little or no reduction in the cost of living. Indeed, the last index number published actually showed a rise in living costs. The country at present is suffering from the familiar complaint of "the morning after the night before." It has had its burst of seeming prosperity, its orgy of high prices, and its debauch of riotous extravagance. Now it feels the reaction.

The wage earner here, as elsewhere, has been determined to secure a higher standard of living, and no one can blame him. He thought the way to secure that was by an advanced level of wages, overlooking the fact that this eventually must increase costs all round with consequently no commensurate advantage in his increased emoluments. In time he may learn that it is

only by an increased output that he can enjoy an increase in necessities and luxuries.

Meantime people either have no money to spend or else are careful not to spend it, and trade all round is feeling the effect, and it is beginning to be borne home to the individual that trade is interdependent, and that a country cannot stand alone. For that reason prosperity cannot be expected here while Central Europe and Russia are boycotted. There is therefore a growing demand to resume trade relations in these directions.

The iron and steel trades are undergoing a period of transition, no doubt somewhat unpleasant. Buyers of pig iron are no longer as pressing as they were, and cheap Continental offers give reason for the home producers furiously to think. The whole output of Cleveland iron, however, which grade is not so dear as some others, is still salable at the old price which has now prevailed so long. The blast furnaces have not yet got over the coal strike, and the output is limited.

In manufactured iron and steel cheap offers from the Continent are current, and home makers are most reluctantly beginning to pare down their prices, an operation which will have to be carried on for some time if they hope to get business or keep plants running. Most works have fair orders on their books and perhaps by the time these are worked off their prices

will have come down to a more reasonable basis. In Scotland a pronounced feeling of uncertainty as to the course of trade in the near future has made its appearance in industrial circles. The reduction in the prices of steel has not brought any appreciable improvement in business. Belgian makers promptly shaded their price to meet the new situation, and succeeded in securing a considerable number of orders for semi-finished and finished material. Ship builders also are beginning to get anxious about replacing the vessels now on the stocks. Ship owners for the moment, at least, are holding their hands.

The biggest liner ever built on the Mersey has just been launched from the yard of Messrs. Cammell Laird & Co. This vessel, the "Samaria," has been delayed six months in construction, and cost an additional quarter of a million pounds owing to the policy of the workers.

Large Output of Coal

WASHINGTON, Dec. 14.—Production of bituminous coal set a new high record in the week ended Dec. 4. The total output, including lignite and coal coked, is estimated at 12,757,000 tons. Not only was this the highest mark attained during the present season, but it has been surpassed only four times during the period over which reports of weekly production extend. The year 1920 is within three and a quarter million tons of 1917, a year when requirements were large and when production about equaled consumption.

Production of anthracite also established a new maximum for the year during the week ended Dec. 4. The total output is estimated at 2,051,000 tons, an increase of 76,000 tons over the latest full time week.

Production of beehive coke recovered slightly during the week ended Dec. 4, when 376,000 tons were produced. This was an increase of 9000 tons, or a little less than 2.4 per cent over the preceding week. Cumulative production for 1920 is now 19,569,000 tons, an increase over 1919 of 1,290,000 tons.

Mistakes of the Interchurch Report

"Mistakes of the Interchurch Steel Report" is the title of an address by Rev. Victor E. Bigelow, minister South Church, Andover, Mass., delivered before the Boston Ministers' Meeting, Nov. 22, which is being widely circulated by the United States Steel Corporation. Judge Gary has addressed a letter to Rev. Mr. Bigelow expressing his admiration for the address, which may be obtained by anyone interested from the United States Steel Corporation, 71 Broadway, New York.

PRODUCTION IN CANADA

Pig Iron and Steel Ingots and Castings for Nine Months of 1920

The total production of pig-iron in Canada during the first nine months of 1920, according to statistics collected by the Mines Branch of the Department of Mines, Ottawa, was 720,079 gross tons (714,829 tons made in blast furnaces and 5250 tons made in electric furnaces from scrap steel) as compared with a production during the first nine months of 1919 of 634,030 gross tons. The average monthly production of pig-iron during the first nine months of 1920 was 80,009 tons as compared with an average monthly production throughout 1919 of 68,288 tons.

The blast furnace plants active during the first nine months were those at Sydney and North Sydney, N. S., Hamilton, Port Colborne, and Sault Ste. Marie, Ont. The blast furnace plants at Midland, Parry Sound, Deseronto, and Port Arthur, Ont., were idle throughout the period. At the end of September 10 stacks were active and 8 idle.

Pig iron was made from scrap iron and steel at four electric furnace plants located at Hull, Montreal and Shawinigan Falls, Que., and Orillia, Ont.

The production of September was 93,680 gross tons, the largest since December, 1918, which was 106,416 tons.

The total production of steel (including ingots and direct steel castings) in Canada during the first nine months of 1920 was 844,360 gross tons, or an average of 94,580 tons per month as compared with a total production during the corresponding period in 1919 of 687,550 tons and an average monthly production throughout the whole of 1919 of 76,926 tons. The production of steel during the nine months included: 804,630 tons of ingots and 39,370 tons of direct castings. The production in electric furnaces was 13,360 tons.

Contract with Barde Steel Products Corporation Canceled

WASHINGTON, Dec. 14.—The tentative contract entered into between the Shipping Board and the Barde Steel Products Corporation for the sale of materials and supplies in shipyards on the Pacific Coast valued at more than \$15,000,000 has been canceled by the board, according to Admiral Benson, its chairman. Admiral Benson has announced that new bids for the sale of the materials will be sought. Criticism of the Shipping Board's policy made before the Walsh investigating committee in New York caused the board to seek new bids for the sale of the supplies. Under the tentative contract entered into with the Barde company the board was guaranteed 50 per cent of the appraised value of surplus supplies with an arrangement by which amounts received by the Barde company in excess of 60 per cent of the appraised value would be divided between the board and the Barde company.

Southern Metal Trades Association

BIRMINGHAM, ALA., Dec. 13.—The Southern Metal Trades Association at the semi-annual meeting held in Birmingham Dec. 8 adopted resolutions calling for repeal of the excess profits tax provision of the income tax law and substitution thereof of a sales or turnover tax of one per cent. Other changes in the income tax law with regard to depreciation of inventories were advocated.

President William T. Harding of Raleigh, N. C., in a brief address called attention to the growth of the association from a membership of 16 three years ago to one of 146 now and declared the outstanding object of the association was to elevate the character of the trade. In particular, he stressed the prompt payment of bills for pig iron.

A dinner was given by the iron and steel corporations of the district, at which Hugh Morrow, vice-president of the Sloss-Sheffield Steel & Iron Co., acted as toastmaster.

C. M. Schwab on the Outcome of the Depression Scrap Iron and Steel Dealers Perfect Organization

Charles M. Schwab, speaking as president of the Pennsylvania Society of New York, at its annual dinner Saturday evening, Dec. 11, referred to the depression in business. He said in part:

"The existing moment is full of difficulties and complexities. Here and there you find prophets of despair. But I want to go on record here as saying that nothing could be healthier for American business than the very condition through which we are now passing. It had to come. I only wish it had come sooner.

"The supreme virtue of the existing situation is that it is compelling every business man in America, in fact, every individual in America, to examine thoroughly his costs of doing business and his costs of living. The result of it all is to force business and to force individuals to start to economize and to save. . . . If the cost of living comes down there is no question that our American laboring man can maintain his present standard of living even though his wages as stated in dollars amount to a less sum than before.

"The great need of the world to-day is to work hard and save. This applies not alone to the laboring man, but to the man of great means. . . . Certain it is that labor must work as it has never worked before if it is to produce a sufficient quantity of goods to make possible the standard of wages which have been enjoyed during these years of inflation and of supreme prosperity. Not merely increased production, but increased efficiency in production is essential.

"When our business men thoroughly study and cope with these problems of economy and make up their minds to go ahead and to produce to the utmost on a smaller margin of profit than they have been accustomed to realize in the years of inflation, then our course will have been set toward a haven of safety and progress.

"We are getting relieved of the impurities in our business life. The process is not complete yet. It may take some little time longer. But the patient will in time be cured and when he is cured the great body of American business will emerge with a vigor and an energy the world has never known before."

Preferential Rail Rates on Import and Export Traffic

WASHINGTON, Dec. 14.—Indications are that as a result of a hearing held before the Shipping Board with respect to Section 28 of the Merchant Marine Act, the board will recommend to the Interstate Commerce Commission further suspension of the section beyond Jan. 1, 1921, when the present suspension expires. If enforced, this section would prevent the application of preferential rail rates to import and export traffic brought to or from the United States in vessels of foreign registry.

Representatives of the Pacific ports of San Francisco and Tacoma and of the transcontinental railroads stated before the board that application of the section would injure the transcontinental business of the railroads and result ultimately in a substantial loss of shipping by the Pacific ports to the Atlantic and Gulf ports. Foreign shipping lines, they asserted, barred from the Pacific ports because of inability to handle cargoes on which for carriage in the United States the regular domestic rates would be applied, would bargain for cargoes for destinations in the Orient at Atlantic and Gulf ports and carry them via the Panama and Suez canals.

The Chamber of Commerce of Los Angeles was the only Pacific Coast body favoring application of the section. In a letter to Chairman Benson of the Shipping Board, the Los Angeles chamber said it had favored Section 28 from its inception and urged its enforcement.

Admiral Benson explained that the only duty the board had was to determine whether there was adequate American shipping to handle the export and import business at a given port and if it so found, the section had to be made operative.

A meeting of the Scrap Iron Division of the National Association of Waste Material Dealers was held following a dinner at Hotel Sherman, Chicago, Dec. 8. Particular attention was paid to the extension of the influence of the division and the enlargement of its membership. The discussion brought out the advantage of joint action in various situations that arise in trade. Emphasis was placed on the efforts now being made to so alter railroad classifications that machinery, boilers, etc., which now take the regular machinery or boiler rate, will be classed as scrap if they are to be used for melting. The proposition which has been put before the railroads is to permit a dealer to scrap such commodities in his own yard if scrapping facilities are not available at point of origin. Under the plan, a railroad inspector would be present during the scrapping, following which a scrap iron rate would be assessed on the freight. The advantage of the traffic department of the association was pointed out and members were encouraged to make use of it.

The propriety of the words "suitable and acceptable" in contracts between dealers was discussed and it was argued that because of their ambiguity they tended to lead to misunderstanding and disagreement. Often a dealer will accept shipments of a certain grade of scrap for a time and if the market declines will reject further shipments on the grounds that they are not suitable and acceptable. In this connection, it was pointed out that the scrap division of the association might well establish an inspection and rejection bureau to pass on such shipments, this having been done with success in other divisions. Further advantage might be derived from the organization of an arbitration board to sit in any disputes which may arise between dealers, thereby reducing litigation. Many of these disputes, it was asserted, could be eliminated if members of the association were in accord as to policy and trade customs.

The point was raised that in a declining market consumers sometimes refuse to accept replacements on rejected cars, and that irrespective of market conditions, some users always deduct shortweights and give no overweights. In this connection the association will prove of value, it was contended, because information regarding the practices of such buyers may be widely disseminated, thus permitting the seller to decide his course accordingly. The matter of credit was also brought up and it was stated that the credit bureau of the association could be used to advantage as a source of information regarding the credit of both dealers and consumers. The experience of other divisions was cited, it being recounted how the size and importance of those organizations in their industries enabled the credit bureau to straighten out collection difficulties both as between dealers and between dealers and consumers. The attitude of a consumer toward a dealer, particularly if he be small, changes when it is known that that dealer is a member of a large association and that any sharp practices indulged in will lower his standing with all dealers in the field.

It was suggested that a uniform scrap classification might be introduced through the efforts of the association. Louis Birkenstein, president S. Birkenstein & Sons, Chicago, cited the uniform classification of non-ferrous scrap, and other advantages derived through the efforts of the non-ferrous division of the association.

The meeting was presided over by Harry De Groat, A. M. Wood & Co., Inc., Philadelphia. Among those who outlined what has been accomplished in some of the other divisions of the organization were F. W. Reidenbach, Coates, Bennett & Reidenbach, Rochester, N. Y., president National Association of Waste Material Dealers, and Charles M. Haskins, New York, secretary of the association.

The Lehmann Machine Tool Co. has moved from 606 South Broadway to 3560 Château Avenue, St. Louis.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	\$0.35	St. Paul	0.695
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.78
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.33	Pacific Coast, ship	
Indianapolis	0.345	plates	1.335
Chicago	0.38	Birmingham	0.765
St. Louis	0.475	Jacksonville, all rail..	0.555
Kansas City	0.815	Jacksonville, rail and	
Kansas City (pipe)...	0.78	water	0.46
		New Orleans	0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e. New York, Philadelphia and Baltimore), to Pacific Coast ports of call on all steamship lines via the Panama Canal are as follows: Pig iron, 55c.; ship plates 70c., ingots and muck bar, structural steel, tin plate, sheets, all wire products, 75c.; pipe not over 8 in. in diameter, 85c.; over 8 in. in diameter, 2 1/2c. per inch, or fraction thereof additional.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in., angles, 3 to 6 in., on one or both legs, 1/4 in. thick and over, and zees, structural sizes, 2.45c.

Wire Products

Wire nails, \$3.25 to \$3.75 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 to \$2 and shorter than 1 in., \$2 to \$2.50. Bright Bessemer and basic wire, \$3.25 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25 as quoted by the American Steel & Wire Co., and No. 8 and heavier, \$3.25, the price of the independent makers; galvanized wire, \$3.95; galvanized barbed wire, \$4.10 to \$4.35; galvanized fence staples, \$4.20 to \$4.45; painted barbed wire, \$3.40 to \$4.10; polished fence staples, \$3.50 to \$4; cement-coated nails, per count keg, \$2.85 to \$3.35; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 58 to 60 1/2 per cent off list for carload lots, 57 per cent for 1000-rod lots, and 56 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets \$4.50 || Large boiler rivets | 4.60 |
Small rivets50 per cent off list
Small machine bolts, rolled threads60 per cent off list
Same sizes in cut threads50 and 10 per cent off list
Longer and larger sizes of machine bolts	45 and 5 per cent off list

Carriage bolts, 1/2-in. x 6-in.:
Smaller and shorter, rolled threads

Cut threads 40, 10 and 5 per cent off list || Longer and larger sizes | 40 and 5 per cent off list |
Lag bolts50 per cent off list
Plow bolts Nos. 1, 2 and 3 head50 and 5 per cent off list
Other style heads20 per cent extra

Machine bolts, c.p.c. and t. nuts 1/2-in. x 4-in.:
Smaller and shorter 40, 10 and 5 per cent off list || Longer and larger sizes | 40 per cent off list |

Hot pressed sq. or hex. blank nuts \$2.25 off list || Tapped nuts | \$1.75 off list |

C. p. c. & t. sq. or hex. nuts, blank list plus \$1.00 || C. p. c. & t. sq. or hex. nuts, tapped | list plus \$1.00 |
| Semi-finished hex. nuts, U. S. S. and S. A. E.: | |

1/4 to 9/16-in. inclusive, 70 and 10 to 75 and 10 per cent off list
% to 1 in. inclusive65 to 70 per cent off list |

Stove bolts in packages70 per cent off list || Stove bolts in bulk | .70 and 2 1/2 per cent off list |

Tire bolts50 per cent off list || Track bolts | .550c. base |

Sq. and hex. head cap screws, both rolled and cut threads:
Milled50 per cent off list |

Upset55 and 10 per cent off list || Set screws: | |

Milled55 per cent off list || Upset | .60 and 5 per cent off list |

One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size, or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$57; screw stock rods, \$62; rivet and bolt rods and other rods of that character, \$57; high carbon rods, \$68 to \$75, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$3.65 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, 1/2-in.,

3/4-in. and 7/16-in., \$4.50; 5/16-in., \$5.25. Boat and barge spikes, \$4.50 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, \$3 to \$3.60 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coating, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. from mill. Common bar iron, 3.63c. to 4c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel				Butt Weld				Iron			
Inches	Black	Galv.		Inches	Black	Galv.		Inches	Black	Galv.	
1/2, 3/4 and 1	47 to 50 1/2	20 1/2 to 24		1/2	15 1/2 to 25 1/2	+1 1/2 to 11 1/2		1/2	15 1/2 to 25 1/2	+1 1/2 to 11 1/2	
1 1/2	51 to 54 1/2	30 1/2 to 40		1 1/2	19 1/2 to 29 1/2	1 1/2 to 11 1/2		1 1/2	19 1/2 to 29 1/2	1 1/2 to 11 1/2	
2	54 to 57 1/2	41 1/2 to 44		2	24 1/2 to 34 1/2	8 to 18 1/2		2	24 1/2 to 34 1/2	8 to 18 1/2	
Lap Weld											
2	47 to 50 1/2	34 1/2 to 38		2	20 1/2 to 28 1/2	8 1/2 to 14 1/2		2	20 1/2 to 28 1/2	8 1/2 to 14 1/2	
2 1/2 to 6	50 to 53 1/2	37 1/2 to 41		2 1/2 to 6	22 1/2 to 30 1/2	11 1/2 to 17 1/2		2 1/2 to 6	22 1/2 to 30 1/2	11 1/2 to 17 1/2	
7 to 12	47 to 50 1/2	33 1/2 to 37		7 to 12	19 1/2 to 27 1/2	6 1/2 to 14 1/2		7 to 12	19 1/2 to 27 1/2	6 1/2 to 14 1/2	
13 and 14	37 1/2 to 41										
15	35 to 38 1/2										
Butt Weld, extra strong, plain ends											
1/2, 3/4 and 1	43 to 46 1/2	25 1/2 to 29		1/2	+17	+50		1/2	13 1/2 to 23 1/2	6 1/2 to 11 1/2	
1 1/2	48 to 51 1/2	35 1/2 to 39		1 1/2	13 1/2 to 23 1/2	6 1/2 to 11 1/2		1 1/2	13 1/2 to 23 1/2	6 1/2 to 11 1/2	
2 to 3	52 to 55 1/2	39 1/2 to 43		2 to 3	18 1/2 to 28 1/2	8 1/2 to 18 1/2		2 to 3	18 1/2 to 28 1/2	8 1/2 to 18 1/2	
	53 to 56 1/2	40 1/2 to 44			24 1/2 to 34 1/2	9 1/2 to 19 1/2			24 1/2 to 34 1/2	9 1/2 to 19 1/2	
Lap Weld, extra strong, plain ends											
2	45 to 48 1/2	33 1/2 to 37		2	21 1/2 to 29 1/2	8 1/2 to 14 1/2		2	21 1/2 to 29 1/2	8 1/2 to 14 1/2	
2 1/2 to 4	48 to 51 1/2	36 1/2 to 40		2 1/2 to 4	23 1/2 to 31 1/2	11 1/2 to 17 1/2		2 1/2 to 4	23 1/2 to 31 1/2	11 1/2 to 17 1/2	
4 1/2 to 6	47 to 50 1/2	35 1/2 to 39		4 1/2 to 6	22 1/2 to 30 1/2	10 1/2 to 16 1/2		4 1/2 to 6	22 1/2 to 30 1/2	10 1/2 to 16 1/2	
7 to 8	43 to 46 1/2	29 1/2 to 33		7 to 8	14 1/2 to 22 1/2	2 1/2 to 10 1/2		7 to 8	14 1/2 to 22 1/2	2 1/2 to 10 1/2	
9 to 12	38 to 41 1/2	24 1/2 to 28		9 to 12	9 1/2 to 17 1/2	8 1/2 to 14 1/2		9 to 12	9 1/2 to 17 1/2	8 1/2 to 14 1/2	

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1 1/2 to 1 3/4 in. + 7 to —	19 1/2	1 1/2 to 1 3/4 in. +	23
2 in. + 2 to —	19 1/2	1 3/4 to 2 in. +	20
2 1/2 to 2 3/4 in. + 3 to 30 1/2		2 in. +	10 to 15
2 3/4 to 3 in. + 11 to 30 1/2		2 1/2 in. +	10 to 12
3 1/2 to 4 1/2 in. + 20 to 40 1/2		2 3/4 in. +	1 to 10
		2 3/4 to 3 1/2 in. +	1 1/2 to + 3
		3 1/2 to 4 1/2 in. +	8 to list

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton		Per Net Ton	
1 in. +	\$327	1 1/2 in. +	\$207
1 1/4 in. +	267	2 to 2 1/2 in. +	177
1 3/4 in. +	257	2 1/2 and 3 in. +	167
1 3/4 in. +	207	4 in. +	187
		4 1/2 to 5 in. +	207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed		Cents	
Per Lb.		Per Lb.	
Nos. 8 and heavier	3.45	Nos. 13 and 14	2.65
Nos. 9 and 10 (base)	3.55	Nos. 15 and 16	3.75
Nos. 11 and 12	3.60		

Box Annealed, One Pass Cold Rolled

Cents		Cents	
Per Lb.		Per Lb.	
Nos. 17 to 21	4.15	No. 28 (base)	4.35
Nos. 22 to 24	4.20	No. 29	4.45
Nos. 25 and 26	4.25	No. 30	4.55
No. 27	4.30		

Galvanized Black Sheet Gage

Cents		Cents	
Per Lb.		Per Lb.	
Nos. 10 and 11	4.70	Nos. 25 and 26	5.40
Nos. 12 to 14	4.80	No. 27	5.55
Nos. 15 and 16	4.95	No. 28 (base)	5.70
Nos. 17 to 21	5.10	No. 29	5.95
Nos. 22 to 24	5.25	No. 30	6.20

Tin-Mill Black Plate

Cents		Cents	
Per Lb.		Per Lb.	
Nos. 15 and 16	4.15	No. 28 (base)	4.35
Nos. 17 to 21	4.20	No. 29	4.40
Nos. 22 to 24	4.25	No. 30	4.40
Nos. 25 to 27	4.30	Nos. 30 1/2 and 31	4.45

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin New York	Lead		Zinc	
	Lake	Elec.		New York	St. Louis	New York	St. Louis
Dec. 8	14.00	14.00	36.00	5.00	5.00	6.60	6.25
9	14.00	14.00	36.00	5.00	5.00	6.60	6.25
10	14.00	14.00	35.00	5.00	4.85	6.50	6.15
11	14.00	14.00	5.00	4.85	6.50	6.15
13	14.00	14.00	33.50	5.00	4.85	6.10	5.95
14	14.00	14.00	33.00	5.00	4.85	6.00	5.90

NEW YORK, Dec. 14.

There is a distinct absence of business in all the markets but the tone is steady. Domestic buying of copper has practically stopped and the market is largely nominal. Buying of tin is on a very small scale but the price tendency is a little lower. The lead market has remained practically stationary and very quiet. The zinc market has lost some of its recent strength and quotations are lower. Antimony is a little weaker.

New York

Copper.—There is practically no buying on the part of domestic consumers, but foreign purchases continue in moderate volume. While the price tendency is not firm, it may be characterized as steady at 14c., New York, for both Lake and electrolytic copper for early delivery, with 14.25c. asked for forward positions in the first quarter. It is not expected that demand will be active this year, but the opinion prevails that by the middle of January buying will be resumed. It is of interest to note that foreign buying is for early delivery, indicating that stocks across the water are extremely low.

Tin.—The market has been very quiet, with only one day in which there was any activity. On Dec. 9 a fair business was done in futures for December-January shipment from the East at 37c., most of the buying having been by dealers. The decline in silver to new low levels has brought out considerable Chinese tin, some of which was offered Dec. 8 at 34.50c. for December shipment. Consumers still remain uninterested and the general market is dull and largely influenced by the trend in London. Yesterday and to-day the London market suffered considerable of a decline until to-day spot standard was quoted at £212 10s. against £223 10s. a week ago, future standard at £216 against £227 15s. a week ago, and spot Straits at £213 10s. against £224 5s. a week ago. This has had its effect here until to-day spot Straits was quoted at 32.50c. to 33.50c., New York. There has been more activity on the New York Metal Exchange, total sales in the week having been about 175 tons at prices ranging from 34.25c. to 35.62½c., the latter representing 25 tons of Straits tin sold under the rule. About 100 tons of this was sold to-day at 34.25c. to 35c. One 25-ton lot went at 30c. under the rule. Arrivals thus far this month have been 1575 tons, with 2450 tons reported afloat. It is reported to-day that the Malay Government has raised its minimum price to an equivalent of £243, c.i.f. New York, and this has temporarily unsettled the market here.

Lead.—The market has been very quiet and steady at 5c., New York, all the week, and the sales made at this level have been quite satisfactory. A decline in London yesterday has had a somewhat unsettling effect because it threatens the possibility of further imports. We quote lead for early delivery at 4.85c., St. Louis, or 5c., New York.

Zinc.—The rebound in the market a week ago has given place to a recession until to-day prime Western for early delivery is quoted at 5.90c., St. Louis, or 6c., New York. This is due largely to the easier London market, which has recently declined quite sharply, threatening further imports. Buying by consumers is

distinctly absent, so far as volume is concerned, and the desire by producers to sell is not keen. While there are indications that stocks in producers' hands have increased recently there are also signs that consumers' stocks are extremely low.

Antimony.—Wholesale lots for early delivery are quoted at 5.50c., New York, duty paid, with no activity. The weakness in antimony is due largely to the lower value of silver.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by the leading interest at 32.90c., producer's plant, while in the outside market the same grade, mostly foreign, is quoted at 23c. to 25c., New York.

Old Metals.—The market is very quiet and prices have eased off somewhat during the past week. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	13.50
Copper, heavy and wire.....	12.50
Copper, light and bottoms.....	10.50
Brass, heavy	9.50
Brass, light	7.00
Heavy machine composition.....	13.00
No. 1 yellow rod brass turnings.....	7.50
No. 1 red brass or composition turnings.....	10.50
Lead, heavy	4.00
Lead, tea	3.50
Zinc	4.00

Chicago

DEC. 14.—The market is dull throughout and lead, spelter and antimony have declined. Price recessions brought out a few purchases of copper in moderate quantities, but buyers have again assumed a waiting policy. A sharp drop in the London market yesterday has not yet affected local quotations in tin. Small quantities of future tin have been bought of late at slightly more than spot quotations, but prompt business is at a standstill. The recent stiffening in zinc which followed the appearance of a moderate amount of business has given way to another slump. We quote Lake copper at 14.50c. in carload lots; tin, 36c.; lead, 5c.; spelter, 6.15c.; antimony, 7c. to 7.50c. On old metal we quote copper wires, crucible shapes, 9c.; copper clips, 9c.; copper bottoms, 7.50c.; red brass, 9c.; yellow brass, 6c.; lead pipe, 3.50c.; zinc, 3c.; pewter, No. 1, 18c.; tinfoil, 20c.; block tin, 25c.; all these being buying prices for less than carload lots.

St. Louis

DEC. 13.—The non-ferrous markets continue quiet with car lot quotations for lead, 4.85c.; spelter, 6.25c. In less than car lots the quotations are: Lead, 5.50c. to 6c.; spelter, 7c. to 7.25c.; tin, 40c.; copper, 16c.; antimony, 7.50c. In the Joplin district the mines are on short production because of the prices and the ores are being held so far as the producers are financially able to do so. Ore prices showed no change nominally from the ranges reported last week, but there was a greater proportion of the lower priced ores sold, making the average for the week lower. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 4.50c.; heavy yellow brass, 6.50c.; heavy red brass, heavy copper and copper wire, 10c.; light copper, 9c.; pewter, 18c.; tinfoil, 25c.; lead, 4c.; zinc, 3c.; tea lead, 2c.; aluminum, 12c.

In regard to the report that they expect to build an addition to their plant, Sleeper & Hartley, Inc., Worcester, Mass., manufacturers of wire coil machinery, etc., state that they are prepared to consider seriously the erection of extensions to their present plant on Chandler Street, Worcester, when the cost of building has been reduced to a point which will make the proposition a reasonable one, and they add: "We will assuredly not enter into any building contracts until the present building costs are very materially reduced."

The name of the C. J. Root Co., Bristol, Conn., has been changed to the Root Co.

INQUIRIES FROM LONDON

England Inquiries for Rails—Some Car Inquiries —Belgium Offers for Export

NEW YORK, Dec. 14.—Although most mills, which have reduced quotations to or near the level of Steel Corporation prices within the past few weeks, are quoting higher for export tonnages, exporters generally claim that with a fair sized order in hand they can without difficulty obtain prevailing domestic prices. One of the large independents in the Pittsburgh district which quotes 2.35c. per lb. base on steel bars for domestic buyers is charging 3c. per lb. base for export.

Under conditions nearer normal in foreign trade, the competition in foreign markets offered by Belgium and Germany would be slight as, according to reports, shipments from these countries are small. Most of the world markets, however, are at present purchasing only small tonnages and with the adverse exchange and the satisfactory credits offered through London and by Germany there is undoubtedly a preference for European material. Belgium is offering steel bars at 2.57c. per lb. base, c.i.f. Antwerp, fine gages of black sheets at

4.92c. per lb., c.i.f. Antwerp, and nails, per keg, at \$4.30, c.i.f. Antwerp. The Gelsenkirchen Bergwerks Gesellschaft in Germany, controlled by Hugo Stinnes and one of the large pre-war producers of pig iron and semi-finished material, is expected to re-enter export markets during the first quarter of 1921.

In order to improve the exchange rate between that country and the United States, the Argentine government is said to be considering legislation to curtail imports of American merchandise for a limited time. Great Britain is slowly regaining her place as a re-exporting country. Representatives of British export houses are taking orders in various markets, many of which found their way to American mills through London. A large inquiry for 3000 tons of 95-lb. steel rails, British specifications, for Australia has been issued through a London exporter and a smaller inquiry for about 300 tons for Cape Town, South Africa, has appeared through London. A New York exporter recently shipped 300 tons of pig iron to Portugal on an order placed from London.

Inquiries are in the market for a total of about 150 dump cars for export shipment, including Mexico and South American markets.

BELGIUM NEEDING BUSINESS

Fair Rail Orders but Little Work for Car Shops and Germany Gets Contracts

BRUSSELS, BELGIUM, Dec. 1.—There were 20 furnaces in blast in Belgium during November, producing between 3100 to 3200 tons per day of 24-hr. This is still considerably under the 1914 figure of 45 furnaces in blast. Since the official publication of these statistics, one of the two furnaces at Halanzy has been blown in. Despite numerous price concessions buyers still look for lower prices and producers hope to sell for export through London or American exporters. It is reported that stocks of pig iron at Longwy total 100,000 tons.

Consumers of fabricated material are covering themselves partly from domestic sources and partially in foreign markets. Great Britain appears greatly concerned at the heavy influx of foreign material, particularly from Germany. While the British are criticising the direct shipments of low priced German manufactures and the indirect shipments through Belgium, where some of the semi-finished material is finished and re-exported, Belgian producers are also feeling the effect of cheap German material.

At present steel bars are quoted at £14 10s. per ton, f.o.b. mill in Belgium, against the German quotation of £14 per ton, f.o.b. Hamburg. Some Belgian makers have offered concessions of 30 to 80s. per ton. Bars in England are quoted as high as £35 5s. per ton, f.o.b. mill. Fair sized orders are being booked by Belgian rolling mills for export.

Recent awards of rolling stock and other railroad material to German manufacturers by the Belgian Railroad Administration has aroused protest from Belgian industry, it being pointed out that the country has a tremendous capacity for this kind of production and that keeping the plants filled with orders is more important than price considerations. Further requests for bids on rolling stock railroad and other material are awaited with interest.

Some fair sized export orders have been booked for shipment to South American markets, but they are neither sufficiently large nor numerous to keep mills occupied long. When the state departments issue inquiries, provided the orders are placed in Belgium, manufacturers anticipate a general improvement in the market. Locomotive and car shops complain that while they have a large capacity their foreign orders are not in proportion to those of the rail mills. Foreign buyers place heavy tonnages of 40 and 44-kilo rails (80 lb. and 88.5 lb.) in Belgium, but evidently inquire elsewhere for this size rolling stock.

Recent importations of American and British steel by Belgian consumers have been unsatisfactory in many

cases. The buyers complain of inferior quality and some of these are turning to Italian plants which have made good offers for fabricating.

British Iron and Steel Output in November

LONDON, ENGLAND, Dec. 14 (*By Cable*).

Production of pig iron in Great Britain in November amounted to 403,800 gross tons and that of steel was 403,800 tons, compared with 533,200 tons of pig iron and 544,300 tons of steel in October, with 741,000 tons of pig iron and 883,900 tons of steel in September, with 752,400 tons of pig iron and 709,200 tons of steel in August and with 750,400 tons of pig iron and 800,000 tons of steel in July. The November pig iron output compares with an average of about 692,220 tons per month for the first 10 months of this year and with the monthly average for 1919 of 617,000 tons. The November steel output compares with an average of 780,510 tons for the first 10 months of this year and with the monthly average for 1919 of 658,000 tons. The November pig iron and steel production was the lowest for any month this year, due to the coal strike.

Switching Case Decided

WASHINGTON, Dec. 14.—The Interstate Commerce Commission has rendered a decision in another of the cases involving switching and spotting services. This is the case of the Central Iron & Steel Co., which manufactures steel plates at Harrisburg, Pa., against the Pennsylvania Railroad Co. and the Philadelphia & Reading Railway Co.

The commission holds that the failure of defendants to perform the service of switching and spotting interstate carload shipments, or to make an allowance to cover the service is not unreasonable in itself but subjects the complainant to unjust discrimination and undue prejudice to the advantage of its competitors for whom such services are performed or to whom such allowances are made.

The complaint of the Central Iron & Steel Co., which was filed July 2, 1919, alleged that for many years it has switched at its own expense carload traffic and empty cars, except shipments of ore, coke, and limestone, comprising approximately 80 per cent of its locomotive movements, between the trunk line exchange tracks and various points within the plant, whereas the defendants make allowances to similarly situated industries for performing similar services or perform such services for them without additional charge. The company's plant adjoins the Pennsylvania and the Philadelphia and Reading railroads.

PERSONAL

H. A. Berg, superintendent of blast furnace operations of the Midvale Steel & Ordnance Co. at Johnstown, Pa., has been appointed to succeed W. A. Maxwell, Jr., as assistant general superintendent of the Cambria Steel Co., Johnstown, the latter having resigned to accept the position of general superintendent of the Inland Steel Co., Indiana Harbor, Ind. Mr. Berg is a graduate of the Technical University of Sweden, and previous to going to the Midvale Steel & Ordnance Co. and its subsidiary, the Cambria Steel Co., in April, 1919, was affiliated with the Carnegie Steel Co. at Homestead, Pa., from 1897 to 1905 and from 1911 to 1919, the intervening period from 1905 to 1911 having been spent with the Midland Steel Co. While at Homestead Mr. Berg successively filled the position of engineer and assistant superintendent of blast furnaces, leaving the latter position to assume the duties of superintendent of blast furnace operations for the Midvale Steel & Ordnance Co. in April of last year.

Bertram D. Taitt has been made superintendent of the National Works, Wickwire-Spencer Steel Corporation, Worcester, Mass., to succeed James E. McKenny, resigned. Mr. Taitt has been assistant to Mr. McKenny during the past year, and previous to that was general manager of the Stenman Wire Specialty Co., Worcester. Mr. McKenny is associated with the Republic Rubber Corporation, Youngstown, Ohio.

Joel R. Hill, consulting engineer, Richmond, Va., has returned from White Sulphur Springs, Mont., after a ten weeks' trip, investigating iron ore property and titles which have been sold to the Montana Iron & Steel Corporation, organized by E. A. Schubert, Roanoke, Va., and P. A. Comer, Butte, Mont.

Frank Thornton, Jr., chief engineer Westinghouse Electric Products Co., has been appointed manager of the electric heating engineering department of the Westinghouse Electric & Mfg. Co. He joined the Westinghouse company in May, 1909, and became engaged in engineering work on electric heating devices. He was appointed chief engineer of the Westinghouse Electric Products Co. at Mansfield, Ohio, in February, 1919. Mr. Thornton's department is a combination of all of the engineering activities in connection with electric heating, including both appliances and industrial applications.

C. W. Couch, until lately the sales manager of the Ford-Clark Co., has formed a selling organization under the name of C. W. Couch & Co., with headquarters at 614 National City Building, Cleveland. Prior to two years army service Mr. Couch had 11 years experience with the Western Automatic Machine Screw Co., Elyria, Ohio, both as Western sales representative and in the factory branches. Among the firms for which the new organization will act as direct selling agent are the Perry-Fay Co., Elyria, Ohio, manufacturer of screw machine products; the City Brass Foundry Co., Cleveland, manufacturer of aluminum, brass and bronze castings; the Superior Metal Products Co., Elyria, Ohio, manufacturer of pressed and drawn steel parts; the Marquette Metal Products Co., Cleveland, manufacturer of hardened and ground steel bushings.

Ethan Viall, for ten years on the staff of the *American Machinist*, has resigned as editor-in-chief to become a partner in the firm of T. W. Minton & Co., Barbourville, Ky., producer of hickory dimension stock. Previous to joining the staff of the *American Machinist* he was for three years associate editor of *Machinery*, and before that he was for 14 years foreman and superintendent in several large specialty manufacturing plants in the Middle West. He is a member of the Society of Automotive Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. He is the author of "United States Artillery Ammunition," "United States Rifles

and Machine Guns," "The Manufacture of Artillery Ammunition," "Broaches and Broaching," "Gas Torch and Thermit Welding" and "Electric Welding." The members of the staff of the *American Machinist* tendered him a farewell dinner Dec. 13.

Leon E. Thomas, who was elected president of the Eastern Pig Iron Association at its recent annual meeting in Philadelphia, is president of the Reading Iron



LEON E. THOMAS

Co., Reading, Pa. He has had a varied experience in iron and steel manufacture. Graduating in the mechanical engineering course of Pennsylvania State College in 1898, he became connected with Mackintosh Hemphill & Co., Pittsburgh, and later entered the engineering department of the Ohio Steel Co., Youngstown, Ohio, taking part in the construction of the first two blast furnaces built at these works. Later he was superintendent of the Youngstown plant of the United Engineering & Foundry Co. and afterwards went to the company's general office at Pittsburgh. In his three years with this company he had much to do with rolling mill construction and was consulting engineer for the Republic Iron & Steel Co. in the building of its rail and sheet bar mill at Youngstown. From 1905 to 1916 he was general manager of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., and in 1916 was made vice-president and general manager. He became president of the Reading Iron Co. in March, 1919. During the war Mr. Thomas was chairman of the war service committee of the steel foundries of the country and in other capacities had an important part in war activities.

C. N. Draper, representing B. K. Morton & Co., Sheffield, England, makers of high speed tool steel, is in this country for the purpose of arranging for the establishment of selling connections. He expects to remain here about two months making his headquarters with Brown Brothers, 59 Wall Street, New York.

E. L. Crowe, formerly in charge of the advertising of the Koppers Co., Pittsburgh, recently resigned and has been succeeded by D. E. Price, formerly secretary to H. P. Rust, president of the company.

Frank O. Howard, sales department, North Works, American Steel & Wire Co., Worcester, Mass., has been made general manager of that company's Atlanta, Ga., office, recently opened.

Thomas M. Platt, formerly with the Southwark Foundry & Machine Co., Philadelphia, as assistant engineer, in charge of power tools for the past five years, has resigned and has opened offices at 722 Drexel Building, Philadelphia. He is arranging to represent manufacturers and do general engineering work.

Stanley R. Costley, for 14 years with J. S. McCormick Co., Pittsburgh, foundry facings, has severed his connection with that company to become identified with Cary & Costley Foundry Supply Co., Fulton Building, Pittsburgh.

W. A. Greenleaf, formerly Cleveland district manager of Allis-Chalmers Mfg. Co., has joined the Erie Ball Engine Co., Pittsburgh, in charge of sales.

G. G. Holbrook, assistant superintendent, hull construction, Fore River Works, Bethlehem Shipbuilding Corporation, Ltd., Quincy, Mass., has resigned to accept a position elsewhere. Mr. Holbrook, Massachusetts Institute of Technology, '10, taught there for two years prior to becoming associated with a Maine shipyard.

Whiting Williams, writer, gave an address on "What's On Workers' Minds in Britain and America,"

before the Engineering Club, Greenfield Tap & Die Corporation, Greenfield, Mass., Dec. 6.

J. C. Kopf, formerly manager of the engineering department of the Duff Mfg. Co., Pittsburgh, has been appointed research engineer and placed in charge of a newly established research department. F. W. Schwerin has been promoted to manager of engineering.

George R. Randolph, formerly with the Buffalo sales office of Warner-Swasey Co., Cleveland, has been appointed Pittsburgh representative of the company and is located temporarily at 5704 Baum Boulevard, Pittsburgh.

George L. Dumbauld, formerly with the Sharon Pressed Steel Co., Sharon, Pa., has become assistant to the president of the Blaw-Knox Co., Pittsburgh, in charge of accounting.

Frank F. Osterman, for 11 years an assistant purchasing agent for the Chicago Great Western Railway, has taken a similar position with the Pere Marquette Railway, with headquarters in Detroit.

Harry M. Badger has been appointed superintendent of the Youngstown Pressed Steel Co., Warren, Ohio, effective Dec. 20. For the past two and a half years he has been superintendent of the Stanley Insulating Co., Great Barrington, Mass.

W. F. Roberts, general manager Bethlehem Steel Co. plant, Sparrows Point, Md., who was appointed a member of the Maryland State Aviation Commission, has been elected president of that body.

George W. Hewitt, secretary-treasurer Duplex Truck Co., Lansing, Mich., has resigned. His successor is Andrew Langenbacher, former sales manager.

Walter G. Esau, president Modern Steel Treating Co., Milwaukee, addressed the members of the Toolroom Workers' Educational Club of Milwaukee at its monthly meeting on Dec. 7 on the subject, "Making and Treating Steels."

K. W. Bartlett, general sales manager Graver Corporation, fabricator of tanks, East Chicago, Ind., has been appointed general manager, succeeding P. S. Graver, elected vice-president. William C. Gibson has been made general sales manager.

T. H. Warner has been appointed district sales manager of the New York office opened by the Falcon Steel Co., Niles, Ohio, at room 1904, 18 East Forty-first Street. Mr. Warner has had offices at 220 Broadway, and is leaving his old connections. John D. Fitzpatrick will be transferred from the home office to the new territory and will be located with Mr. Warner in the New York office.

James M. Woltz, safety director of Youngstown Sheet & Tube Co., Youngstown, Ohio, lead the discussion on the proposed code for overhead cranes as prepared by the Ohio Industrial Commission, at a meeting Dec. 10 of the electrical section of the Engineers' Club of the Youngstown district.

D. A. Burt, president LaBelle Iron Works and vice-president and treasurer of the Wheeling Steel Corporation, recently was elected a director of the West Virginia Manufacturers Association.

The American Frog & Switch Co., Hamilton, Ohio, has established New York offices at 149 Broadway, in charge of Presley Hamilton and H. F. Whiteman.

Clarence H. Kennedy, sales manager Kennedy Valve Mfg. Co., Elmira, N. Y., is recovering from painful injuries received in an automobile accident at Elmira on Saturday, Dec. 11. As he was driving his machine to the plant, the vehicle skidded on the icy pavement and collided with a street car. He was taken from the wreckage unconscious and first reports stated that his skull had been fractured. When he regained consciousness, this was found to be not the case and recent information is to the effect that he is on the way to recovery.

OBITUARY

HORACE E. DODGE, automobile manufacturer of Detroit, and since the death recently of his brother, John F. Dodge, head of the Dodge Brothers Co., died Dec. 10 at Palm Beach, Fla., of hemorrhages, aged 52 years. He was born in Niles, Mich., where his father was the proprietor of a small machine shop. The brothers, Horace and John, learned the machinist trade. After they left high school they went to Detroit. Their first business venture was the purchase of the old Canadian Typograph plant in Windsor, Ont., and the manufacture of bicycles in 1900. Through many vicissitudes, their industry, courage and genius brought them to the head of one of the largest automotive manufacturing companies in the world, with a plant employing 23,000 men and making 625 cars a day. In 1901 they sold out their bicycle business and started a machine shop on Beaubien Street, Detroit. In 1910 they built a factory in Hamtramck, the site of the present plant. For a number of years, the Dodge brothers manufactured automobile parts. In 1914 they started the manufacture of automobiles on their own account. Between 1914 and 1920, the Dodge Brothers Co. made 600,000 cars. In 1914 they had 20 acres of floor space in their plant; to-day there are more than 100 acres of floor space. Horace Dodge was interested in charities and music.



HORACE E. DODGE

GEORGE MARSTON WHITIN, treasurer and for 34 years head of the Whitin Machine Works, Whitinsville, Mass., textile machinery, died Dec. 8, at his home, after a long illness, aged 64 years. He was born in North Uxbridge, Mass., Sept. 11, 1856. His education was obtained in the public schools of Northbridge and Williston Academy, Easthampton, following which he served his apprenticeship in the Whitin Machine Works, then operated by his father. Later, when he became head of the concern, Mr. Whitin increased the business three-fold. He was associated with several mill properties.

JOHN F. NELLIS, vice-president Charles C. Kawin Co., foundry engineer, Chicago, died at his home in that city Dec. 10, after an illness of less than a week. Mr. Nellis had devoted his entire life to the foundry industry, having been identified with it as a boy and having worked as a molder and foundry superintendent in various shops throughout the country. Eighteen years ago he left the Griffin Wheel Co. to become associated with Mr. Kawin. His duties with the Kawin company brought him in intimate contact with foundries in all sections of this country and Canada.

LOUIS D. FORBES, secretary-treasurer P. B. Yates Machine Co., Beloit, Wis., since its establishment, died Dec. 3 at the age of 72 years. He associated with the Berlin Machine Works when established at Berlin, Wis., in 1884, and maintained an executive connection from the time of the transfer of the operation to Beloit, Wis., in 1888.

LOUIS BRAINARD, mechanical engineer Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., died at his home in Rocky Hill, Conn., Dec. 8, of pneumonia, 40 years old.

WILLIAM M. FITZPATRICK, who for over 33 years was a traveling salesman for the S. Obermayer Co., Chi-

cago, foundry equipment, died on Dec. 8 at his home in Reading, Pa.

MOSES L. ANDREWS, for the past 30 years president M. L. Andrews & Co., special machinery manufacturers, Cincinnati, died at his home in that city on Dec. 9, at the age of 82.

HENRY H. MARCUSSON, Haggard & Marcusson Co., Chicago, metal goods, died Nov. 10.

GEORGE W. SMITH, Samuel Smith Machine Co., Lawrence, Mass., builder of iron work and structural steel, died Dec. 5.

Seventy-fifth Birthday of Tinius Olsen Celebrated

Tinius Olsen, founder of the Tinius Olsen Testing Machine Co., 500 North Twelfth Street, Philadelphia, on the occasion of the seventy-fifth anniversary of his birth, was tendered a "surprise party," Dec. 7, at the company's works. Old friends, business and social, numbering about 300, and all the employees, regardless of rank, were in attendance. The celebration began with a luncheon served in one of the shops.



TINIUS OLSEN

Thorsten Y. Olsen, son of Mr. Olsen, presided, the chief speaker being Samuel Vauclain, president Baldwin Locomotive Works. In part, Mr. Vauclain said:

"Mr. Olsen was born more than a mile from here, in a country in which it is very difficult to get along, from which nearly 40 per cent of its inhabitants have come to

America. The constitution of the United States makes us in this country free and equal. Mr. Olsen is one of those men who has enjoyed freedom and equality in this country, and who has also been able to establish a position for himself prominent among his associates.

"In these days of strife between capital and labor, it is comforting to look back over the history of a man of this kind, a man who never brought malice to any living being, a man who struggled along against all sorts of difficulties, depending upon his fellow men to support him and labor with him, a man who has established a large and useful business for the country and who has also established for himself a name among engineers and business men.

"I think Mr. Olsen is responsible for my early success in life. Over 40 years ago there came to Altoona for the Pennsylvania Railroad a hydraulic testing machine, if I remember correctly, of 100,000 lb. capacity, designed by Mr. Olsen when he was employed by a testing machine building concern and it became my business to keep this machine in repair. In fact, several had tried to repair this machine when it proved balky but I happened to be the successful young man in looking after its ailments and therefore all my extra money, upon which I built what little fortune I have to-day, was earned through this testing machine, which Mr. Olsen perfected and put in operation in the Altoona Testing Laboratories of the Pennsylvania Railroad.

"I do not believe Mr. Olsen ever knew what a benefactor he was because he built a few things on this machine that would give trouble and would have to be fixed. Mr. Olsen asked me a little while ago how many years I had been at Baldwins. Well, I told him practically 38 years. I have a man working for me who has been there 76 years. He is a faithful worker up to his capacity and has been the means of bringing work to hundreds of people in that establishment. No place is operated by any one man.

"Mr. Olsen gives credit to his workmen here for his success. Mr. Olsen in our conversation attributed

his success in life to the loyalty of the men who work for him."

Prior to the speaking the younger Mr. Olsen read a cablegram of congratulations which came from Norway, and a letter of congratulation from William Sellers & Co., Inc., Philadelphia, with whom he was connected from 1869 to 1871. Anton Hansen, the oldest employee of the Olsen works, read a short presentation speech and then handed Mr. Olsen a gold-headed walking stick in behalf of the employees. Other tributes were paid to Mr. Olsen by Carl Barth, the mathematician, who was identified with the introduction of the Taylor system; Hugo Bilgram, designer and manufacturer of heat generating machinery; Prof. H. C. Berry of the Civil Engineering Department of the University of Pennsylvania, and others. The invocation was pronounced by Arthur Hood of the Mt. Airy Presbyterian Church, who also told how Mr. Olsen attended Sunday school regularly and was thus an example to younger generations.

Three generations of Olsens were present at the ceremony, a grandchild, also named Tinius, being among the guests. He is the son of T. Y. Olsen, the vice-president and treasurer of the company.

Mr. Olsen was born in Kongsberg, Norway. He came to the United States as a workman in 1869. He is possessed of rugged health and looks good for the many years more which his friends wished for him.

Cleveland Section of Welding Society

Preliminary steps toward forming a section of the American Welding Society in Cleveland, were taken at a meeting at Hotel Statler in that city, Dec. 1, by 85 men variously interested in the welding industry. S. W. Miller, consulting engineer and manager, Rochester Welding Works, Rochester, New York, reviewed conditions that exist in the industry and pointed out the need of bringing together a group of manufacturers and operators whose object would be to place autogenous welding on a sounder and better basis and one that would be acceptable to the Boiler Code Committee of the American Society of Mechanical Engineers. He also referred to a need of developing methods under which materials that are to be welded can be more closely inspected and specifications prepared for the testing of welds.

J. H. Deppler, president of the American Welding Society and chief engineer, Metal & Thermit Corporation, New York, gave an explanation of the Thermit process of welding illustrated with motion pictures. L. B. MacKenzie, secretary and treasurer of the Chicago section of the American Welding Society and editor the *Welding Engineer* reviewed the work the Chicago section has accomplished the past five years and pledged the co-operation of that section.

C. J. Nyquist was temporary chairman of the meeting and Charles L. Bennett, secretary. Eighteen applications for membership were received and these, together with 19 members of the parent organization will give the 25 members required to start the section. Another meeting will be held in about two weeks to complete the organization.

The Osgood-Bradley Co., Worcester, Mass., which last month reduced its working force, last week closed a contract for 25 cars for the Detroit Traction Co., the deal involving \$250,000. The cars will be of the newly-patented one-man type.

METAL SCHEDULE

Hearing on Tariff Provisions Will Soon Begin Before Ways and Means Committee

WASHINGTON, Dec. 14.—Hearings on the metal schedule of the Tariff Law will be held by the Ways and Means Committee of the House of Representatives Jan. 12, 13 and 14. That is the present plan of the committee, and the representatives of the steel industry will be given time enough to present their views on the complicated details covering the various iron and steel items. Hearings on the free list, which now includes iron ore, pig iron, steel ingots and steel rails, will be held Feb. 11, 12 and 13.

The hearings on the bill will begin Jan. 6, and the first witnesses to be heard will testify concerning the chemical schedule—Schedule A—which includes paints and oils. Then will come Schedule B—earthenware and glassware—and then Schedule C, covering metals and manufactures of metals. The other schedules will be taken up in turn, with from one to three days for each, and it is the plan of the committee to end these hearings Feb. 16. This, however, is contingent upon the committee's ability to hear all of its witnesses during the six weeks so allotted. This may not prove possible, for several weeks were consumed last year in hearings on tungsten, manganese, molybdenum, chrome and allied items which constitute only a small part of the metal schedule.

Internal Revenue Laws

In the meantime, the Ways and Means Committee has already begun hearings on the proposals to revise the internal revenue tax laws, but the members have no intention of attempting such a revision during the present session. The present hearings as well as the coming tariff hearings will be used merely as the basis for the tax and tariff labors of the special session of the Sixty-seventh Congress. During his brief stay in Washington last week, President-elect Harding told the House and Senate leaders that he would convene the special session within a week or two after his inauguration on March 4, so that it might proceed at once to the heavy task of revising the internal and customs revenue laws. In the meantime, he asked the present Congress to clean up its labors on the appropriation bills for the coming fiscal year, to leave as little work as possible for the special session.

There is still no indication that the present Congress will do much in the way of legislation outside of the appropriation bills. With less than nine weeks of actual life remaining, practically no laws can be passed except by unanimous consent. This probably will defeat even the efforts to revise the immigration laws at the present session, despite the pressure, chiefly from labor union circles, for a greater restriction upon influx of aliens.

Wide Divergence of Opinion

The hearings which have been begun on the general question of taxation revision seem only to emphasize the wide divergence of opinion in both Houses. There is strong feeling among Republicans as well as Democrats that the excess profits tax should be repealed, but this is still contingent upon the discovery of a substitute that will net more than \$1,000,000,000 a year. The one substitute which would net this sum—a tax on all kinds of sales, retail as well as wholesale, better known as a turnover tax—has so many opponents that it probably could not be passed. A tax on retail sales would have more friends and might be adopted, but it would net only about \$300,000,000, and that is far from being enough to cover the deficit which the repeal of the excess profits tax would leave.

If the leaders of the Ways and Means Committee can carry out their present program and can complete the tariff hearings during the month of February, they hope to have a tariff bill ready for introduction at the opening session of the Sixty-seventh Congress. If they do, the Senate finance committee expects to begin its tariff hearings at that time, and to hear witnesses on the different schedules at the same time that the bill

is being considered by the House. In this way, the finance committee will be ready to take speedy action as soon as the completed bill has been passed by the House. Under this program the internal revenue revision will not be taken up by the House until the tariff bill has been sent to the Senate, but it is not unlikely that the two bills will ride to their final passage in both Houses almost simultaneously. This will be almost necessary because in the end the final touches upon the internal revenue measure will depend largely upon the amount of revenue which the Fordney-Penrose tariff bill will promise to produce. It is not believed, however, that either bill will be completed before August, and a session lasting into September or October seems more likely.

Moving to Youngstown District

The Wilder Metal Coating & Mfg. Co., Connellsville, Pa., is now moving all its equipment to a new plant now under construction on a four-acre site south of Niles, Ohio, tapped by the Baltimore & Ohio and Erie railroads. The initial building unit will be 30 x 208 ft. The company has been in business in Connellsville for eight years and manufactures aluminum coated sheets, with special attention directed to stove and oven linings, reflectors for electric ranges and heating apparatus. By locating in the Youngstown district, the company effects a substantial economy in freight rates on raw material. John P. Wilder is president; L. W. Fogg, vice-president, and F. A. Kale, secretary and treasurer.

David J. Joseph Co. Organized

The David J. Joseph Co., with head offices in Cincinnati, has been incorporated with a paid-in capital of \$500,000, to deal in iron and steel scrap and new and relaying rails. The company will commence operations Jan. 3, 1921, and will operate plants at Cincinnati and Youngstown. David J. Joseph, secretary of the Joseph Joseph & Bros. Co., for the past 17 years, heads the new company as president and general manager, and the following officers of the company will represent it in the districts named: Phil W. Frieder, vice-president, located at Youngstown, Ohio, in charge of Cleveland, Youngstown and Pittsburgh districts; Charles D. Jacobson, vice-president, located at Detroit, in charge of that district; Albert L. Marks, McCormick Building, Chicago, and I. V. Amerman, Frisco Building, St. Louis. All the above men were for many years connected with the Joseph Joseph & Bros. organization.

Plans of the Falcon Steel Co.

The Falcon Steel Co. is installing a galvanizing department at its sheet mill plant in Niles, Ohio, which will be ready for operation by the first of the year. The addition will contain three galvanizing pots. Heretofore the bulk of its production has been black and blue annealed sheets. The company operates six sheet mills and two jobbing mills. Plans have been completed to double existing capacity, but the date when work will start is indefinite owing to uncertain business conditions. It had been originally planned to commence the extensions next spring. Lloyd Booth, formerly treasurer of the Trumbull Steel Co. at Warren, Ohio, is president of Falcon Steel Co., while Paul Wick, formerly in the sales department of the Trumbull company, is general manager.

The W. L. Blake Co., 79-85 Commercial Street, Portland, Me., mill and plumbers' supplies, has purchased the property of the Cumberland County Power & Light Co., on East Commercial Street, that city, and will erect buildings thereon for the storage of supplies and equipment.

The total membership of the American Society for Testing Materials on Dec. 1 was 2909, compared with 2754 at the annual meeting in June.

Machinery Markets and News of the Works

BETTER INQUIRY

Orders for Machine Tools Also More Numerous

On the Whole the Market Remains Quiet, but Sentiment Among Sellers Is More Cheerful

A more cheerful tone is in evidence in some of the machine-tool markets, due to a promising increase in the number of inquiries and slightly better buying.

At Pittsburgh there was a change in sentiment following the receipt of inquiries from the Pennsylvania Railroad for equipment for its Mingo Junction, Ohio, shops. Also there appeared a revised inquiry from the American Window Glass Machine Co. for about a dozen tools.

At Cleveland the Trumbull-Cliffs Furnace Co., Warren, Ohio, has purchased a few machines and is in the market for others.

Cincinnati machine-tool builders have received a few orders during the past week, engines, lathes and planers being mostly in demand. An Eastern shipbuilding company has inquired for heavy tools, including two or more

planers. Some scattered railroad buying is also reported from that market.

There has been a greater number of miscellaneous orders in Chicago, including buying by the Sante Fe Railroad and a St. Louis car construction company. The Lafayette Motors Co., Indianapolis, is in the market for several tools. The Waukesha Motors Co., Waukesha, Wis., which has had a good-sized inquiry before the trade for several weeks, is expected to buy within a week or two. The Chicago, Burlington & Quincy Railroad has inquired for several tools.

More inquiry is also noted in New England. The New York market continues extremely quiet.

Some machine-tool builders are sounding out the market to determine whether it will be possible for them to reduce production costs. Their inquiry in some cases has covered the cost of castings. Many of the foundries appear unwilling to commit themselves to a definite lower price, but are willing to guarantee prices against decline or will base contracts on quoted prices of foundry pig iron. In the Pittsburgh district orders for steel castings have been placed at 5c. per lb. in contrast with the peak price of 9c. paid several months ago.

New York

NEW YORK, Dec. 14.

There is no improvement in machine-tool business, but on the contrary a further decline in the volume of inquiries and orders. The past week has been the quietest of the year in this market, and the trade is fully resigned to the belief that there will be no buying of importance until after the first of the year. Just how long a period of the new year must elapse before there will be a revival of buying is a matter for conjecture, as there is nothing tangible upon which to base predictions. Some in the trade believe that there will be a degree of improvement in January, but others do not look for any marked change until spring.

Some of the machine-tool manufacturing plants plan on shutting down for one or two weeks during the holiday period, at which time the annual inventory will be taken and necessary repairs made to equipment. Reduction of working hours and working forces in nearly all machine-tool plants is now quite general.

As a result of the cancellations which have been made of machine-tool orders, new machines are now being offered by exporters and dealers at slightly reduced prices. One export firm offers 75 tools, all new and boxed for export, at prices below those which were paid for the machines. There is said to be quite an accumulation of new and second-hand tools throughout the country which are being offered for sale. The demand for used tools is better at present than for new machines.

While price adjustments on machine tools are not frequent, it is known that some machine-tool builders are anxious to adjust their costs on a basis where reductions may become possible. An interesting announcement is made by Sleeper & Hartley, Inc., Worcester, Mass., maker of automatic wire coiling machinery, which states that it has decided to put into effect at once a 10 per cent price reduction on all of its standard and special machinery. "We take this action," they say, "in spite of the fact that we do not see any reason to believe that there will be any immediate reduction in the cost of labor, or in our raw material prices. We take the ground, however, that prices in general are too high and must be reduced and the sooner such a custom becomes general the better for industry."

A number of inquiries for both electric and hand-power cranes is in the market, but evidently most of them will

carry over into next year. The recent report of a reduction in prices of locomotive cranes by one company was due to the fact that special concessions were granted by one builder in certain sales. This created the impression that a formal reduction had been made, which THE IRON AGE is informed is not the case.

The Bureau of Supplies and Accounts, Washington, is requesting bids on two 3-ton hand-power cranes for Texas, to be purchased from the 1921 budget. Request for bids on 34 cranes for piers of the Pan American Terminal & Dock Co. will not be issued by the city until appropriation has been made by the Sinking Fund Commission. The Lord Construction Co., 105 West Fortieth Street, New York, is asking approximate prices on a 20-ton, 46-ft. 10-in. span, 30-ft. lift overhead traveling crane. An inquiry for a 3-ton, 27-ft. span overhead traveling crane formerly issued through Thomas J. Bird, New York, has been reissued by the McNab & Harlin Mfg. Co., Paterson, N. J.

Among recent sales are: Chisholm-Moore Mfg. Co., a 10-ton, 14-ft. span hand-power crane to the Metal & Thermit Corporation, New York, for South San Francisco, Cal., and three 2-ton jib cranes to the Wright Aeronautical Corporation, Paterson, N. J.; Champion Engineering Co., two 10-ton, 60-ft. span overhead traveling cranes to the Lima Locomotive Corporation, Lima, Ohio.

The E. W. Bliss Co., Adams and Plymouth streets, Brooklyn, manufacturer of machinery, has filed plans for the erection of a one-story foundry addition, 50 x 180 ft., on Fifty-fourth Street, to cost about \$22,000.

The General Hardware Co., New York, has been incorporated with a capital of \$150,000 by J. M. Kohlmeier, W. H. Sterling and J. B. Scharfenberg, 135 Myrtle Avenue, Brooklyn, to manufacture hardware and other metal specialties.

The A. C. Chesley Co., 277 Rider Avenue, New York, manufacturer of hollow metal and metal-covered doors, etc., is completing plans for its two-story, brick and steel addition, 50 x 200 ft., estimated to cost about \$100,000. P. J. Murray, 141 East Fortieth Street, is architect.

The Thornley Coalometer Corporation, New York, has been incorporated with a capital of \$300,000 by M. C. Heaney, T. L. Walsh and F. C. Thornley, 31 West Forty-third Street, to manufacture thermostats and thermostatic heating control devices.

The Eastern District Iron Works, 179 Lorimer Street, Brooklyn, has acquired property at 233 Indian Street and

plans for the early removal of its works where increased space will be available.

The Metal Package Co., 346 Carroll Street, Brooklyn, manufacturer of metal boxes and containers, has increased its capital from \$1,000,000 to \$2,200,000, for expansion. It recently acquired the plants of the John Boyle Co., Inc., and the John Boyle Can Co., Baltimore, Md., as branch plants.

George Cooke, Kissam Place, Jamaica, L. I., is taking bids for a new one-story machine shop, 35 x 60 ft., at Kissam Place and Archer Street, to cost about \$10,500.

The American Arca Regulator Co., New York, has been incorporated with a capital of \$300,000 by S. E. Osmar, R. Carlstedt and H. Carlson, Grand Central Palace, to manufacture special regulating equipment and other machinery.

The Triple Action Spring Co., 549 West Fifty-ninth Street, New York, has increased its capital to \$50,000.

The International Paper Co., 30 Broad Street, New York, has had plans prepared for the construction of a new hydro-electric power plant on the Saranac River, near Cadyville, N. Y., to cost about \$250,000, including machinery. It is also planning the construction of a paper mill addition to one of its plants in Canada to cost close to \$3,000,000 with machinery.

The Remington Phonograph Corporation, 1662 Broadway, New York, manufacturer of talking machines and parts, has acquired about 15 acres in the vicinity of the Trenton Fair Grounds, Trenton, N. J., as a site for a new plant. It is proposed to begin erection early in the spring, with initial works to give employment to about 400 persons. The company is operating factories at Brooklyn and Jersey City, N. J.; the former plant will be maintained, and following the completion of the Trenton works, the Jersey City plant will be removed and merged with the new factory. The company was organized about a year ago and Philo E. Remington, formerly connected with the Remington Typewriter Co., is head. James S. Holmes, previously associated with the Remington Arms Co., is also an official.

The United Electric Light & Power Corporation, 130 East Fifteenth Street, New York, is having revised plans prepared for its new electric generating plant at 134th Street and the East River, estimated to cost in excess of \$2,500,000. New bids have been asked.

Abendroth Brothers, Inc., 101 Park Avenue, New York, manufacturer of stoves, with plant at Port Chester, N. Y., has increased its capital from \$600,000 to \$800,000.

The Concrete Clip & Wire Co., New York, has been incorporated with a capital of \$25,000 by J. L. Carty, J. A. Byrne and I. I. Levy, 87 Nassau Street, to manufacture metal specialties for concrete reinforcement.

The Kelly-Springfield Tire Co., 200 West Fifty-seventh Street, New York, has abandoned plans for the occupancy of its new four-story works at Tenth Avenue and Fifty-fourth Street, 100 x 175 ft., recently completed, and will concentrate operation at its new works at Cumberland, Md., now nearing completion. The New York building aggregates about 50,000 sq. ft. of floor space, and has been leased for a long term of years to the Fox Film Co.

The Bloch Brass Co., New York, has been incorporated with a capital of \$50,000 by S. Abrams, T. A. Hammer and L. Bloch, 1306 Ocean Avenue, Brooklyn, to manufacture brass fittings and specialties.

Quincy & Schroeder, Inc., New York, has been incorporated with an active capital of \$55,000 by J. R. Courtney, R. B. Quincy and E. C. Schroeder, 62 East Thirty-fourth Street, to manufacture electric motors and similar products.

The Worthington Pump & Machinery Corporation, 115 Broadway, New York, is taking bids for the erection of a one-story addition to its plant at St. Bernard, Ohio, 50 x 75 ft.

The United Lead Co., Maurer, near Perth Amboy, N. J., has filed plans for two additions to cost about \$150,000. The larger structure will be three-stories, steel and concrete, 110 x 175 ft., estimated to cost \$125,000, and the other one story, 60 x 200 ft., to cost \$25,000.

Edward Koppell, Brooklyn, manufacturer of elevators and parts, has removed his plant from 198 Roebing Street to 32 Dodworth Street, where increased facilities will be provided.

The Alexander Sussman Iron Works, 448 East 167th Street, New York, has filed plans for a one-story shop addition, 40 x 140 ft., to cost about \$10,000, exclusive of equipment.

De Boer, Bach & De Boer, Inc., New York, has been incorporated with a capital of \$73,000 by L. and M. De Boer, and E. Bach, 600 West 116th Street, to manufacture cutlery.

The Eaton Mfg. Co., Dobbs Ferry, N. Y., has been incorporated with a capital of \$45,000 by E. F. and C. B. Woolston, and M. E. Van Nostrand, Hastings-on-Hudson, to manufacture metal products and specialties.

The Anchor Post Iron Works, 165 Broadway, New York, manufacturer of galvanized wire fences, railings and gates, with plants at Garwood, N. J., and Cleveland, has arranged for a stock issue of \$200,000. Herbert J. Thompson is president.

The Standard Welding Co., Jersey City, N. J., has been incorporated with a capital of \$125,000 by Albert O. Martin H. and Harry M. Schriefer, 748 Communipaw Avenue, to manufacture welding products.

F. H. Allen & Co., Inc., Newark, N. J., has been incorporated with a capital of \$125,000 by John W. Beck, James H. Ward, Jr., and Franklin H. Allen, 26 Lawrence Street, to manufacture electrical appliances.

The Titan Miniature Lamp Co., 281 Glenwood Avenue, Bloomfield, N. J., has been organized to manufacture electric lamps. F. M. Merrick, 182 Bay Avenue, Glen Ridge, N. J., heads the company.

The Edison Lamp Works of the General Electric Co., Sussex Street, Harrison, N. J., has plans under way for a four-story brick and reinforced-concrete addition, 80 x 200 ft., on South Street. John H. and Wilson C. Ely, Firemen's Building, Newark, are architects.

The Van Sicklen Co., 121 West Sixty-third Street, New York, manufacturer of speedometers, has abandoned plans for the operation of a Newark, N. J., plant, and its recently constructed factory at 84 Warren Street, that city, has been placed on the market. It is eight stories with an aggregate floor space of 130,000 sq. ft. The company is now operating plants at Elgin, Ill., and Toledo, Ohio, which will be continued.

The Industrial Mfg. Corporation of America, Newark, manufacturer of metal products, has leased space at 227 High Street for new works.

The Shoppe Flush Valve Co., 10 Railroad Place, Newark, has filed notice of organization to manufacture valves and similar specialties. Frank L. Shoppe, 104 Jackson Street, Passaic, N. J., and Edward G. Hedges, 271 Belleville Avenue, Newark, head the company.

Reinhold, Schumann, Inc., 23 William Street, Newark, manufacturer of surgical instruments, etc., has increased its capital to \$75,000.

The Newark Auto Parts Co., 75 Mount Prospect Avenue, Newark, has filed notice of organization to manufacture automobile equipment. Joseph C. Baldi heads the company.

The Central Auto Top Co., 561 Central Avenue, Jersey City, N. J., has been organized to manufacture motor tops and frames. Herman Genis, 202 Monticello Avenue, heads the company.

The Paper Working Machines Co., Palmetto Street and St. Nicholas Avenue, Brooklyn, N. Y., has discontinued business. Its machinery and most of its patterns and patents have been purchased by the Corrugating Machinery Corporation, which has leased the building.

The Air Reduction Sales Co. has completed the construction of a four-story addition to its apparatus plant in Jersey City, N. J., to provide for increased production of the Airco "A" welding and "D" cutting torches. The extension is of modern factory construction, brick, with reinforced-concrete floors.

New England

Boston, Dec. 13.

Although business continues on a limited scale, sentiment in local machine tool circles appears more cheerful than a week ago. A number of inquiries for one or more machine tools and cranes are noted, some of which have possibilities. A large portion of the inquiries received the past week, however, have been to sound the market, but the fact that inquiries are coming in is encouraging. Machine tool builders in turn are sounding the foundries regarding casting prices for 1921. As a rule foundries are not willing to commit themselves on quotations, but some have expressed a willingness to guarantee prices against a decline.

A number of machine tool builders outside of New England have advised local dealers of an increase in selling commissions ranging from 2½ to 5 per cent, which generally is taken to mean manufacturers are anxious for business and are offering an inducement to secure new orders. With the possible exception of two or three tools with special attachments, no price cutting has been noted.

The Beacon Folding Machine Co., Lynn, Mass., capitalized for \$100,000, all of which has been paid in, and recently incorporated under Massachusetts laws, has covered on about 20 machine tools, new and used, for a machine shop, to employ 40 men. Other small shop requirements are in the making, and it is understood that one local company is preparing a list to be issued within the next three months involving \$100,000. New York, New Jersey and Pennsylvania

companies are interested on small lots of used tools in this market. Augustin Fuller & Co., Inc., New York, is inquiring for two lathes, 16-ft. bed and 8-ft. bed respectively; one 24-in. shaper with swivel vise; one 24-in. x 24-in. x 6 ft. planer; two drill presses, one with 24-in. and two with 20-in. diameter plates, and one double-head grinding column with 12 x 2-in. wheel capacity, all for export. New or used tools in good condition will be considered. Stanley & Patterson, New York, electrical goods, want a No. 2 universal grinder and a small bench lathe.

The radiator department equipment of the Marlin-Rockwell Corporation, New Haven, Conn., was sold at public auction on the premises Dec. 7. It involved a number of machine tools, as well as a quantity of raw material and office equipment.

The Hartford Metal Treating Co., Hartford, Conn., has filed a final certificate of dissolution.

The Pittsfield Electric Co., Pittsfield, Mass., plans to spend \$1,000,000 by 1925 in extending its service and enlarging its main works. William A. Whittlesey is general manager.

Stockholders of the Coburn Trolley Truck Mfg. Co., Holyoke, Mass., have authorized an increase in the capitalization from \$350,000 to \$650,000, by the issue for cash, at par, of 3000 additional shares of cumulative preferred stock, to provide working capital.

The Brien Heater Co., Westfield, Mass., has been taken over by the Phillips & Clark Co., Geneva, N. Y., and will be moved to that city the first of the year. Theodore R. Brien will continue to operate the Bay State Foundry Co., but will discontinue the manufacture of heaters.

The Goodwin Mfg. Co., Hartford, Conn., metal goods and novelties, capitalized for \$50,000, of which \$26,500 is paid in, has incorporated under State laws. Harley E. Goodwin and Edwin W. Kibbe, Hartford, and Benton S. Cooley, Glastonbury, are the incorporators.

The Valley Falls Foundry & Machine Co., Valley Falls, R. I., expects to begin operations soon after the first of the new year. Buildings formerly occupied by the Rhode Island Perkins Horseshoe Co. are being equipped.

Considerable damage by fire was done to the plant of the United Awl & Needle Co., West Medway, Mass., recently, which will be repaired as soon as possible. A small amount of equipment will be needed. The company is a subsidiary of the United Shoe Machinery Corporation, Beverly, Mass.

The New Bedford Shuttle Co., New Bedford, Mass., will equip a small machine shop in its new two-story plant, 10 x 125 ft.

The West Bridgewater Foundry Co., West Bridgewater, Mass., will build two small additions to its plant before spring. H. E. Bryant is manager.

C. H. Leppert, Asylum and Spruce streets, Hartford, Conn., manufacturer of motors and parts, has completed plans for a new two-story plant on Walnut Street, 41 x 65 ft., to cost about \$20,000.

Foster, Merriam & Co., Meriden, Conn., manufacturer of castors, brackets and general hardware specialties, has increased its capital from \$570,000 to \$1,000,000.

Plans prepared for a new one-story foundry, 90 x 90 ft., at Green and Lawnsdowne streets, Cambridge, Mass., by George Lawrence, 24 Cambria Street, Boston, will be held in abeyance until early in the coming year. Walter T. Littlefield, 9 Hamilton Place, Boston, is architect.

The New England Power Co., Worcester, Mass., will issue bonds for \$550,000, the proceeds to be used for additions and improvements.

The United States Bobbin & Shuttle Co., 57 Eddy Street, Providence, R. I., manufacturer of textile equipment, has taken out a permit for a one-story addition to its plant on Mast Street, Manchester, N. H., to cost about \$25,000.

The Ideal Auto Sheet Metal Works, 68 Market Street, Hartford, Conn., has filed notice of organization to manufacture metal equipment for automobile use. Nathan Taslitt, 48 Brook Street, is head.

W. L. Blake & Co., Portland, Me., pipe, fittings, etc., have acquired property on East Commercial Street, heretofore held by the Cumberland County Power & Light Co. as a site for a new works.

The Colonial Mfg. Co., Stamford, Conn., has been incorporated with a capital of \$50,000 by Alfred Cavliero, 38 Fairfield Avenue, and Adolph Antonelli, 43 West Avenue, to manufacture bolts, nuts, etc.

The Standard Oil Co., 26 Broadway, New York, has awarded all miscellaneous contracts for its new five-story machine works and automobile repair and service building at Cambridge, Mass., estimated to cost in excess of \$200,000 with equipment.

C. P. Hebbard and H. R. Young of the Hebbard-Young Co., Lynn, Mass., and Clarence Benner of the Benner Awning Co., are organizing a company to establish a plant for the manufacture of metal frame storm and sun shields for automobiles.

The Shanbrom-Merberg Co., New Haven, Conn., has been incorporated with a capital of \$50,000 by A. J. and Aaron Shanbrom, and Charles Merberg, 191 Spring Street, to manufacture iron, steel and other metal products.

A new crane runway, stone crushing plant and mechanical buildings will be erected by the Berkshire Stone Products Co., South Egremont, Mass., estimated to cost about \$100,000, including equipment. J. R. Hampson & Co., Inc., Pittsfield, Mass., has the building contract.

The Connecticut Auto Parts Co., 18 Morgan Street, Hartford, Conn., has purchased a four-story brick building at 25-27 Mechanic Street, where it will remove its present works to secure increased facilities.

Philadelphia

PHILADELPHIA, Dec. 13.

The Broad Mfg. & Supply Co., Philadelphia, is being organized by local interests, represented by Frank A. Moorshead, Commonwealth Building, to manufacture steam, water, gas and electrical equipment. Application for a State charter will be made on Jan. 3.

The Clearfield Textile Machine Co., 1826 East Clearfield Street, Philadelphia, has acquired the building at the corner of Clearfield and Jasper streets, 200 x 220 ft., to be used in connection with its works.

The Department of Public Works, City Hall, Philadelphia, will build a new central machine works and automobile service building for city automobiles on the block bounded by Cherry, Race, Juniper and Watts streets. The site totals 108 x 150 ft.

The May Foundry Co., Sixty-first and Eastwick streets, Philadelphia, has filed plans for rebuilding the section of its plant recently damaged by fire.

The Allentown Lock & Signal Co., Allentown, Pa., has been incorporated with a capital of \$30,000 to manufacture locks, locking devices and other mechanical specialties. Herman Senger, 248 North Second Street, is treasurer.

The Bureau of Yards and Docks, Navy Department, Washington, D. C., has plans under way for the construction of a large machine shop at the Cape May, N. J., navy yard. It is proposed to commence construction early in the spring.

The Aluminum Brazing Solder Co., Widener Building, Philadelphia, has filed notice of increase in capital to \$50,000, at the same time changing its name to Peters, Inc.

The New Famous Chandelier Co., Philadelphia, is being organized by David Brussell and Myer Genstein, to manufacture electric and gas lighting fixtures and attachments. The company is represented by A. S. Ashbridge, Jr., 1319 North American Building. Application will be made for a State charter.

The Lewis & Roth Corporation, Thirteenth and Wood streets, Philadelphia, manufacturer of electrical products, has arranged for a change in name to the Electric Power & Equipment Corporation. The personnel of the company will remain as heretofore.

The Maccar Truck Co., Gilligan Street, Scranton, Pa., manufacturer of automobile trucks, will hold in abeyance until spring the erection of its proposed one-story building, 95 x 200 ft., and bids will be asked at that time. The structure is estimated to cost about \$75,000.

The South Wilkes-Barre Motor Car Co., South Wilkes-Barre, Pa., will take bids in the spring for an automobile service and repair building, 75 x 100 ft., to cost about \$30,000. James A. McGlynn, 394 North Washington Street, Wilkes-Barre, is architect.

Fire, Dec. 4, destroyed a portion of the plant of the United States Asbestos Co., Manheim, Pa., with loss estimated at about \$100,000, including equipment.

The Klauder-Weldon Dyeing Machine Co., Jenkintown, Pa., manufacturer of textile machinery and parts, is taking bids for a new one-story, brick and concrete plant at Bethayres, Pa., 150 x 250 ft. Charles Barton Keen, 1218 Chestnut Street, Philadelphia, is architect. Plans are also to be drawn for a two-story building at the same location, 44 x 50 ft., and bids will be asked later.

The Rigby Valve & Machine Co., West Middlesex, Pa., has been incorporated with a capital of \$50,000 to manu-

facture machinery, parts and general mechanical specialties. W. P. Shaw, West Middlesex, is treasurer.

The Delaware, Lackawanna & Western Railroad Co., Scranton, Pa., is completing final surveys for the electrification of its lines East and West through the Scranton district. It is said that a list of equipment will be arranged at an early date.

The American Chain Co., Princess Street, York, Pa., has completed foundations for a new two-story foundry and pattern shop, 200 x 300 ft., and superstructure work will proceed at once.

The Susquehanna River & Western Railroad Co., New Bloomfield, Pa., has acquired local property for the erection of new engine and machine shops and grading and filling in the site will begin at once. These shops will replace the repair works now operated at Newport, Pa., and which plant will be removed to the new location.

The Multiplex Mfg. Co., Berwick, Pa., manufacturer of pumps, valves, etc., is considering the erection of a two-story building on East Fifth Street, to cost about \$10,000.

The American Nickeloid Co., Peru, Ill., has acquired a tract of land at Walnutport, near Slatington, Pa., as a site for a new nickel products plant. An existing building will be improved and used in connection with the initial works, and plans are under way for the erection of a new two-story factory, 40 x 125 ft.

The Traylor Engineering & Mfg. Co., Allentown, Pa., manufacturer of machinery and parts, will continue operations at its plant on regular production basis. It is said that orders on hand insure operation until at least March 1.

The H. W. Johns-Manville Co., Madison Avenue and Forty-first Street, New York, manufacturer of roofing, building products, etc., will soon commence the installation of machinery at its limestone properties at Plymouth Meeting, Pa., for quarrying operations, including reduction works.

Pittsburgh

PITTSBURGH, Dec. 13.

While actual business in machine tools remains extremely limited a more cheerful feeling exists in the trade, due to the Pennsylvania Railroad having appeared in the market for equipment for its shops at Mingo Junction, Ohio. This is the first sign of railroad buying here in several months. The American Window Glass Machine Co., which put out a list of 10 or 12 tools and then withdrew it, has revived the inquiry and it is possible that a machine shop crane also will be bought. A large number of mill motors is included in the inquiry of the International Nickel Co. for its new rolling mill at Huntingdon, W. Va., which is to be electrically driven throughout. Thus far none of the equipment for this plant has been placed and the expectation is that the awards, which will be made in New York, will not be placed until after Jan. 1. The crane market is dead at present and no material improvement is looked for this year. No changes are noted in crane prices.

The American Steel Band Co., South Canal Street, Northside, Pittsburgh, has acquired a building, 60 x 100 ft., in the vicinity of its works on South Canal Street, as an addition.

The Henry Lohrey Co., 2234 East Street, Northside, Pittsburgh, will take bids early in the coming year for remodeling a building into a three-story automobile truck repair plant, 25 x 95 ft., at East and Howard streets, to be used for company motor trucks. C. W. Hodgson, Martin Building, is architect.

The Follansbee Brothers Co., Pittsburgh, iron and steel products, has approved an increase in capital stock from \$4,000,000 to \$11,000,000.

The Lawson Mfg. Co., Lexington Avenue and Thomas Boulevard, Pittsburgh, manufacturer of stoves, heaters, ranges, etc., has called a special meeting of stockholders on Feb. 8, 1921, to vote an increase in capital to \$100,000. L. E. Rott is secretary.

The Bacharach Industrial Instrument Co., Second Avenue, Pittsburgh, has acquired a two-story factory, 91 x 135 ft., at the corner of Murtland Avenue and Bennett Street, where it will remove its present plant early next month, providing increased production.

The Elliott Co., Pittsburgh, is being organized by W. S. Elliott, J. E. Watson and A. K. Riley, to manufacture machinery and mechanical appliances. Application will be made for a State charter. Alter, Wright & Barron, 1012 Park Building, represent the company.

The Cowan Mfg. Co., Pittsburgh, is being organized by Joseph P. Cowan, Herbert F. Saylor and Torrence V. Keiffen, to manufacture fabricated metal and other specialties, in-

cluding elevators and equipment. Application for a State charter will be made on Dec. 27. Thorpe D. Nesbit, 915 Park Building, represents the company.

Heyl & Patterson, Inc., 51 Water Street, Pittsburgh, manufacturer of elevators and hoists, has awarded all miscellaneous contracts for its new two-story addition at First Avenue and Short Street, to cost about \$60,000.

J. R. Herbertson, Brownsville, Pa., has completed plans for a two-story addition, 67 x 75 ft., to his automobile service and repair works at West Brownsville, to cost about \$50,000. Building contract will soon be let. E. R. Johnson, Uniontown, Pa., is architect.

The Wheeling Axle Co., Wheeling, W. Va., is planning the erection of a new foundry.

Detroit

DETROIT, Dec. 13.

The machine tool market continues stationary, awaiting some decided change in the industrial situation. A few small replacement orders were booked the past week, but none of particular importance has been reported.

The Stearns Register Co., 111 East Fort Street, Detroit, manufacturer of air registers, etc., has taken bids for a one-story and basement addition, 100 x 185 ft., on Twelfth Street, to cost about \$50,000. Isaac Stearns is president.

The Apex Motor Corporation, Ypsilanti, Mich., has been incorporated with a capital of \$1,000,000 by O. William Heintz, Fred M. Guy and Thomas S. Matthews, Ypsilanti, to manufacture automobiles and parts.

The Continental Garage Tool Co., Jackson, Mich., has been incorporated with a capital of \$50,000 by Oliver E. Eckert, Casper Haehnle and William G. Berger, Jackson, to manufacture automobile repair tools, machine and hand tools, etc.

Considerable machinery for vocational training will be installed in the new technical high school to be erected by the Board of Education, Detroit, at Second Avenue and High Street. The structure is estimated to cost about \$2,500,000, and bids are now being taken. Malcolmson, Higginbotham & Palmer, Moffat Building, are architects.

The Howell Foundry Co., 99 Merrick Avenue, Howell, Mich., has completed foundation work for its new one-story foundry, and plans for the erection of the superstructure at once. It will be 90 x 100 ft., and is estimated to cost about \$40,000. Charles A. Kanter is secretary.

The Star Quality Accessory Co., Detroit, has been incorporated with a capital of \$100,000 by A. C. and Wilber D. Graw, and J. C. D. Graw, 711 Union Trust Building, to manufacture automobile bumpers and similar metal products.

The C. & D. Mfg. Co., Detroit, has been incorporated with a capital of \$50,000 by G. T. DuBois, A. B. Eggert and Ray J. Corrigan, 59 Glendale Avenue, to manufacture washing machines, mangles and other mechanical laundry equipment.

The Transue Williams Steel Forge Co., Alliance, Ohio, will hold in abeyance until spring the erection of its proposed branch plant at Marysville, Mich., estimated to cost about \$40,000.

The Premier Drill & Tool Co., Detroit, has been incorporated with a capital of \$50,000 by Frank G. Dunn, Millard W. Wells and John F. Gotttron, 493 Glynn Court, to manufacture drills, jigs, tools and similar specialties.

The F. C. Mason Co., St. Johns, Mich., manufacturer of agricultural implement specialties, has arranged for a preferred stock issue of \$40,000.

The power house and other sections of the plant of the Acme Chair Co., Reading, Mich., were destroyed by fire, Dec. 2, with loss estimated at \$150,000, including equipment.

Buffalo

BUFFALO, Dec. 13.

The Hewitt Rubber Co., 240 Kensington Avenue, Buffalo, manufacturer of air brake hose and other mechanical rubber goods, has awarded contract to the Buffalo Structural Steel Co., Mutual Life Building, for a one-story addition, 30 x 180 ft., to cost about \$30,000.

The Robertson-Cataract Electric Co., 151 West Mohawk Street, Buffalo, manufacturer of electrical equipment, has filed notice of increase in capital from \$1,500,000 to \$3,000,000. J. D. Robertson is president.

The DeLaney Forge & Iron Co., 300 Perry Street, Buffalo, has filed notice of dissolution under State laws.

The Huther Brothers Saw Mfg. Co., 1190 University

Avenue, Rochester, N. Y., has awarded a contract to J. H. Reinhard, 17 Fayer Street, for a one-story addition, 40 x 100 ft.

The H. H. Franklin Mfg. Co., Syracuse, N. Y., manufacturer of automobiles, has arranged for a preferred stock issue of \$1,500,000. The company is completing the erection of a new plant which it expects to occupy at an early date.

The Owego Light & Power Co., Owego, N. Y., has plans under way for an addition to its power plant.

The W. H. Landers Co., 104 East Willow Street, Syracuse, N. Y., manufacturer of stoves, furnaces, etc., has increased its capital to \$75,000.

Frank C. Miller, 1677-79 Main Street, Buffalo, is arranging for the establishment of a machine works and automobile repair shop in a two-story building, 50 x 50 ft., at Main and Balcom streets.

Milwaukee

MILWAUKEE, Dec. 13.

The development of some new business, although small, during the last 10 days has been very encouraging to machine tool builders, and it is the opinion of manufacturers as well as dealers that December will show a material increase in sales over November, and also October. Even more encouraging is the steady increase in inquiries and considerable new buying is looked for after the beginning of the new year. While the automotive industries are buying sparingly, some business is coming from the railroads, manufacturers of printing presses, tobacco machinery, coal mine equipment, and a number of other industries.

The Bull Milking Machine Co., Fort Atkinson, Wis., a \$500,000 corporation chartered several months ago, has perfected its organization by the election of the following officers: President, William Spaeth, Jr.; vice-president and chief engineer, Leonial Bull; secretary, J. W. Meyer; treasurer, Clarence Aspinwall; directors, H. H. Curtis, George Kachle, John J. Urban. The company has acquired the building at 80-82 North Main Street, 50 x 185 ft., and is installing additional equipment.

The Magnetic Mfg. Co., 764 Windlake Avenue, Milwaukee, has increased its capital stock from \$25,000 to \$100,000. It contemplates the erection of an addition to its machine shop early in the spring. J. P. Bethke is secretary.

The Ideal Barn Equipment Co., Horicon, Wis., manufacturer of metal stable fixtures, etc., has plans for a two-story brick addition, 40 x 90 ft., costing about \$25,000 with equipment. Work will start about Jan. 1. F. H. Bogda is manager.

The Grand Rapids Foundry Co., Wisconsin Rapids (formerly Grand Rapids), Wis., is erecting a brick and steel pattern shop and storage vault, 50 x 140 ft. This will release considerable space in the machine shop for the installation of additional equipment.

The Master Self-Locking Differential Co., Clintonville, Wis., a new organization with \$250,000 capital stock, has selected Green Bay, Wis., for its permanent works and offices. A building 60 x 100 ft., under construction at Pearl and Arndt streets, two stories and part basement, has been leased, and machinery is being purchased. Production is planned to begin Jan. 1. In addition to manufacturing differential locks, it will do gear cutting on an extensive scale. The officers are: President, M. W. Kiley, Clintonville; vice-president and general manager, Benjamin Kasuboski; secretary and treasurer, Chester J. Kyle.

The Wisconsin Electric Welder Co., Milwaukee, has been chartered to manufacture electric welding and cutting apparatus and operate a commercial welding shop. The capital stock is \$150,000 and the incorporators are G. F. Runge, E. H. Mills and Walter L. Poppe, 434 Cass Street.

The Milwaukee Ice Machine Co., Milwaukee, which some time ago purchased the plant and equipment of the Steam Appliance Co., Sixty-third Avenue and Burnham Street, in West Allis, has perfected its reorganization by the election of the following officers: President, William Valentine; vice-president, William Sievert; secretary, Harry Schroeder; treasurer and general manager, John Weltzer; directors, Leonard Galbrecht, John Ganser and Gustav Schaska. The business of the Steam Appliance Co. will be continued as a distinct corporation, with the same officers and directors.

The Meigs-Powell Co., 522 Sixteenth Avenue, Milwaukee, manufacturer of tools, gages, micrometers, etc., has changed its capitalization from \$50,000 preferred stock to 1500 shares of common without par value, equivalent to \$150,000. The number of directors has been increased from three to five. A three-story building recently was acquired and has been equipped with considerable new machinery. John D. Powell is secretary and treasurer.

The Latex Tire & Rubber Co., Fond du Lac, Wis., will erect a laboratory and experimental plant, 80 x 60 ft., to cost about \$25,000.

The Board of Education, Sheboygan, Wis., has accepted revised plans from Childs & Smith, architects, Chicago, for the new central high school, estimated to cost \$1,250,000. The first unit, to be erected at once, will contain manual training shops, power and boiler house. Bids will be taken about Jan. 1.

The Board of Education, Durand, Wis., has engaged Oppenhamer & Obel, architects, Wausau, Wis., to design a new high school and vocational training institute to cost approximately \$100,000. Edward H. Miles is secretary.

The Storm King Mfg. Co., Hartford, Wis., which recently established a plant to manufacture automobile and truck cabs, tops and specialties, has incorporated its business with a capital stock of \$25,000. The incorporators are Clifton Montgomery, Arthur J. Hazen and Gordon Davey.

The Gold Seal Battery Co., Green Bay, Wis., incorporated with a capital stock of \$300,000, has broken ground for a one-story brick and concrete manufacturing building, 40 x 150 ft., at James and McDonald streets, to be ready about Jan. 15. A production of 100 batteries a day, or 3000 per annum is planned for the first year. The officers are: President, E. J. Balza; vice-president, James D. Saley; secretary and treasurer, F. J. Mongin; directors, Louis J. Moreau and T. J. Bast.

The Northern Paper & Pulp Co., Peshtigo, Wis., has engaged Mead & Seastone, consulting and contracting engineers, State Journal Building, Madison, Wis., to design and erect a new pulp mill and power plant at Lakewood, Marinette County. The power equipment includes two 850-hp. turbines and governors. A. A. Pamperin, Peshtigo, is vice-president and general manager.

Baltimore

BALTIMORE, Dec. 13.

The Republic Boiler & Radiator Co., Maryland Casualty Tower, Baltimore, recently incorporated with a capital of \$1,000,000 to manufacture steam and hot water boilers, and kindred specialties, is considering a number of sites in the eastern section of the city for its new plant. Enos S. Stockbridge, E. McClure Rouzer and William Lentz head the company.

John J. Greer & Co., Inc., 207 West Pratt Street, Baltimore, iron and steel, has increased its capital from \$50,000 to \$200,000.

George W. W. Wilkinson, head of the Crown Electric Co., 164 North Gay Street, Baltimore, manufacturer of electrical specialties, has acquired property at 419-25 High Street for the erection of a new building.

A. L. Flint, general purchasing officer, Panama Canal, Washington, will receive bids until 10:30 a. m., Dec. 21, for brass, copper and steel tubing, valves, ship augers, bridge reamers, saws, wrenches, breast drills, sledge hammers, eye and ring bolts, electrical equipment, etc., for the Panama Canal Zone.

The Industrial Bureau of the Board of Trade, Baltimore, is negotiating with officials of the War Department, Washington, for the establishment of a projected aircraft and aviation works in the vicinity of the city. The proposed plant will replace the present works at McCook Field, Omaha, Neb., where the department's lease expires on Jan. 1, and which, it is said, will not be renewed.

The Board of Harbor Commissioners, Wilmington, Del., will begin work early in the spring for the proposed new municipal port terminal at the Lobdell tract, recently acquired. Hoisting, loading and conveying machinery for freight handling will be installed.

The Wood-Taylor Corporation, Bristol, Va., recently organized, has acquired a local plant for the manufacture of concrete block machinery. J. L. Wood is secretary and treasurer.

The Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, has plans under way for an addition to its power house on Front Street, which will occupy the entire site on Madison Street, extending from Constitution to Graves street.

The Southern Ice Machine Co., Charlotte, N. C., recently organized with a capital of \$125,000 to manufacture ice-making machinery, will use an existing building for its initial works, installing machine tools and other necessary equipment. At a later date the company proposes to build

a new plant. F. A. Owens, 205 South Poplar Street, is president, treasurer and manager.

The Thomas Brothers Co., Florence, S. C., has been organized by W. E. Thomas and H. H. Heard, to manufacture gas burners and similar equipment.

Following the completion of the first unit of its new automobile plant, the Wizard Automobile Co., Charlotte, N. C., is planning for the erection of additional units, each 100 x 400 ft. It is proposed to develop an annual output of about 10,000 complete automobiles. The company was recently organized with a capital of \$1,000,000 and this amount has been increased to \$2,000,000. F. W. Edwardy, Sr., is president.

The Cementile Roofing Co., Norfolk, Va., has acquired a site and plans the erection of a factory, 40 x 100 ft. H. D. Griffin is vice-president.

The Farmers Plow Co., Fayetteville, N. C., has been incorporated with a capital of \$100,000 by W. T. Herndon, Sr. and Jr., and W. H. Merritt, to manufacture plows and other agricultural equipment.

The National Roller Co., 307 Pearl Street, New York, manufacturer of roller equipment for mining work, has acquired a site at Beard, N. C., and contemplates the erection of a new plant.

The Standard File & Rasp Co., 113 North Collington Avenue, Baltimore, has changed its name to the National Plating & Mfg. Co.

The Bowen & Bartlett Co., Inc., 1201 South Sharp Street, Baltimore, manufacturer of washing machines, has increased its capital stock to \$200,000.

The Portsmouth Metal & Foundry Corporation, Portsmouth, Va., will rebuild its plant recently burned.

The F. N. Hayes Machine Co., Roanoke, Va., contemplates the erection of an addition to its plant.

The machine shop of the Towers & Sullivan Mfg. Co., Rome, Ga., recently burned, will be rebuilt.

Chicago

CHICAGO, Dec. 13.

Broadly speaking, it cannot be said that the market situation has undergone any material change. The past week, however, has not only brought out a few additional inquiries, but has been marked by some buying of fair proportions. A car construction plant in the St. Louis district has purchased a special machine for car frame work which represents an outlay of about \$50,000. A 42-in. engine lathe has been bought for a corn products plant at Kansas City and the Kupferle Brothers Mfg. Co., St. Louis, has purchased a turret lathe. The International Harvester Co. bought two 24-in. shapers for its Canton, Ill., plant. The Santa Fe has ordered two turret lathes, a heavy duty drill press and a motor-driven engine lathe. These machines were not bought against the Albuquerque list, but represent tools which the railroad failed to purchase when it closed earlier lists. The Chicago, Burlington & Quincy has issued a small list of heavy equipment, including two wheel presses, a car wheel borer, an axle lathe and a motor-driven grinder. The Lafayette Motors Co., Indianapolis, is in the market for two 24-in. turret lathes, two radial drills, two 16-spindle multiple drills, a special five-head milling machine and a special single-head milling machine. The Waukesha Motors Co., Waukesha, Wis., which has had an inquiry before the trade for several weeks, is expected to buy within the next week or two.

The Narowetz Heating & Ventilating Co., 223 West Lake Street, Chicago, has let contract for the construction of a one-story plant, 82 x 132 ft., at 1711-1717 Park Avenue, to cost \$65,000.

The Window & Door Screen Co., 5118 South State Street, Chicago, will receive bids on a one-story factory 50 x 120 ft., at 5116 South State Street, to cost \$20,000.

The Columbia Steel & Shafting Co., Pittsburgh, has purchased 115,500 sq. ft. at the southwest corner of Kedzie Avenue and Forty-seventh Place. The first unit of a plant, to cost \$250,000, will probably be built next spring. This will be used as a warehouse and later a manufacturing unit will be built.

The Grand Rapids Malleable Co., Grand Rapids, Mich., will build a coal pulverizing plant, 35 x 65 ft., and 50 ft. high. The cost of the machinery and structure is estimated at \$100,000.

The Sheet Steel Products Co., Rockford, Ill., has been incorporated with \$200,000 capital stock by Walter H. Hendrickson, David Pizer, R. D. Chappell and E. D. Reynolds to manufacture sheet steel products. The company has purchased a building at Fourteenth Street and Fourteenth Avenue and expects to commence operations soon after Jan. 1.

The Gallion Iron Works, manufacturer of culverts, Kansas City, Mo., has leased a two story plant with 15,000 sq. ft. of floor space at 1323-27 West Ninth Street.

The plant of the Golden Foundry & Machine Co., Golden, Ill., was recently destroyed by fire.

The H. B. Sherman Mfg. Co., manufacturer of brass and bronze castings, Battle Creek, Mich., has acquired an electrical motor plant at Quincy, Ill., and will move it to Battle Creek. As soon as business warrants a new plant will be built there.

The American Stamping Co., manufacturer of oil cups, Battle Creek, Mich., contemplates erecting a new plant early next year.

The Marquette Boiler & Sheet Iron Works, Marquette, Mich., has built an addition which will be used exclusively for the repair of locomotives. It will serve logging companies, quarries, and mines that have their own locomotives.

The Atlas Tractor Co., Adrian, Mich., is preparing to break ground for a plant to cost \$60,000. The board of directors includes John W. Koehn, Ray Dowling, John Nixon, R. A. Kaiser and Fred Stark.

The Chicago, Rock Island & Pacific Railroad Co., 139 West Van Buren Street, Chicago, will soon commence the erection of a one-story wheel shop at Cedar Rapids, Iowa.

The American Rubber Co., 1526 South Wabash Avenue, Chicago, is taking bids for a two-story, brick and steel plant, 60 x 400 ft., at Centralia, Ill., to cost about \$100,000. The Consulting Co., 2801 Union Central Building, Cincinnati, is engineer.

The Haskel & Barker Car Co., Michigan City, Ind., has completed plans for a one-story foundry addition and one-story power plant, to cost about \$80,000. Frank D. Chase, Inc., 845 North Michigan Avenue, Chicago, is architect.

The Commonwealth Edison Co., 72 West Adams Street, Chicago, has issued a call for bids for its proposed three-story power plant, 300 x 310 ft., at 100th Street and Commonwealth Avenue, estimated to cost about \$5,000,000, including machinery. Sargent & Lundy, 72 West Adams Street, are engineers.

Cleveland

CLEVELAND, Dec. 13.

Machine tool sales are light, being limited almost wholly to single lots. Only two lists are regarded as active at present, and are those of the Ohio Locomotive Crane Co., Bucyrus, and the Trumbull-Cliffs Furnace Co., Warren, Ohio. The requirements of the latter include lathes, shapers, radial drills, some of which have been placed, and a 2500-lb. steam hammer, which has been purchased. An occasional order for punching and shearing machinery is coming out.

Some orders for single locomotive cranes are being placed and one inquiry is pending for five cranes. The plant of one of the leading local locomotive crane builders is running close to capacity, part of its product going into stock, from which a good demand is expected early in the spring.

Building contractors report considerable new inquiry from various sections of the country for factory buildings, and look for an improvement in the building field after the first of the year.

Sales of machine tools are expected to be very light during the remainder of the year, but dealers look for some improvement in January. However, the general feeling in the trade is that the demand will be slow the first few months of the year.

The Ohio Pipe Bending & Machine Co. has moved its factory to the corner of Elm and Washington streets, Cleveland. The new plant is equipped for bending pipe up to 30 in. in diameter and will also do acetylene welding.

The Drop Die & Engineering Co., Cleveland, has increased its capital stock from \$25,000 to \$100,000. It has made no plans for extensions in the near future.

The Hauger Wheel Mfg. Co., Terre Haute, Ind., recently incorporated with a capital stock of \$500,000, has purchased

the plant and equipment of the Consolidated Mfg. Co., Toledo, Ohio, and will manufacture demountable automobile rims. J. C. Fair is president.

The Matthews Mfg. Co., Sandusky, Ohio, plans to erect an addition, 100 x 150 ft., to cost about \$75,000.

The Fabricated Steel Co., Leetonia, Ohio, contemplates rebuilding its plant, recently burned.

The Wagner Mfg. Co., Sidney, Ohio, is enlarging its plant by the erection of an aluminum foundry and polishing, cleaning and assembling department. New equipment will be installed.

The Adamson Mfg. Co., East Palestine, Ohio, has practically completed the remodeling of a frame building adjoining its foundry and machine shop, and is equipping it for the manufacture of electric arc welded products up to 2000 lb. The equipment has been purchased. C. E. Scheuring, formerly works manager Insley Mfg. Co., Indianapolis, will manage the department. Six welding generators will be installed and provisions made for six more. One of the principal products will be underground gasoline storage tanks.

Cincinnati

CINCINNATI, Dec. 13.

The machinery market is not entirely devoid of orders, a number of engine lathes and planers having been sold to manufacturers in different parts of the country during the week. These were mostly single machines, but in some cases two tools were taken. An Eastern shipbuilding company is inquiring for heavy machinery, including at least two planers. Some scattered railroad buying also is reported, but mostly in single tools to round out or replace worn out equipment. Local shops are operating at about the same rate as last week, and it is expected that the present schedule will continue until after the first of the year when an improvement in business is looked for.

The Estate Stove Co., Hamilton, Ohio, closed down Saturday for four to six weeks. While the plant is idle changes will be made to give more efficiency and economy in operation. The company has let a general contract to the Marcus Building Co., Cincinnati, for an addition to cost \$50,000, including equipment. Most of the equipment has been contracted for.

The Board of Education, Cincinnati, will receive sealed proposals until Jan. 10 for the installation of a 36-in. cupola, steel pressure blower and motor complete, to be installed in the East Side High School. The machine shop has been equipped.

The Wilson Engineering & Contracting Co., Xenia, Ohio, has purchased the plant and equipment of the Shawnee Refrigeration Co., and will continue the business.

The Kruse & Bahlmann Hardware Co., Cincinnati, has been authorized to increase its capitalization from \$300,000 to \$700,000. It is erecting a seven-story building adjacent to its present plant on Pioneer Street, and it is to finance the operations that the additional capital was issued. The new plant will be completed about April 1.

The Farrell-Stoneham Engineering Co., Dayton, Ohio, has purchased the Arnstein factory property at Dakota and Mathison streets, which will be ready for occupancy about the middle of December. It heretofore has been engaged in the designing of tools, jigs, etc., but recently purchased the stock and equipment of the Federal Tool & Machine Co. and will manufacture small tools. J. P. Farrell is president.

The Buckeye Steel Castings Co., Columbus, Ohio, will increase its capitalization from \$4,500,000 to \$7,000,000. No announcement has been made as to whether or not the extra capitalization is to be used for extensions.

The Crystal Ice Mfg. & Cold Storage Co., 397 West Broad Street, Columbus, Ohio, is planning for the installation of new coal and ash-handling machinery at its power house.

Indiana

INDIANAPOLIS, Dec. 13.

The Parker Tire & Rubber Co., 2641 Allen Avenue, Indianapolis, will call for bids in the early spring for a new two-story plant, 100 x 600 ft., at 2700 Allen Avenue, estimated to cost about \$300,000, with machinery. Paul P. Parker is president; George L. Whitset is company engineer.

The Pioneer Brass Works, 424 South Pennsylvania Street, Indianapolis, has completed plans for a new one-story

machine shop, 75 x 175 ft. J. H. Brinkmeyer is president.

The Indiana Tractor & Silo Co., Anderson, Ind., will soon commence the erection of a one-story addition, brick and steel. C. C. McGuire is vice-president and general manager.

The Hercules Corporation, Evansville, Ind., a merger of local companies, is arranging for a stock issue of \$6,000,000. The company is capitalized at \$8,000,000, the different units including the Hercules Body Mfg. Co., Hercules Gas Engine Works, Hercules Wheel Co., Hercules Buggy Co. and the Indiana Color & Varnish Co. W. H. McCurdy is president.

The Lafayette Motors Co., Indianapolis, is planning for the installation of lathes, drill presses, boring mill, milling machines, etc.

The Board of Directors, Crown Point Hospital, Crown Point, Ind., is having plans prepared for the construction of a two-story power plant, 50 x 50 ft., in connection with other improvements. J. N. Coleman, 6257 St. Lawrence Street, Chicago, is architect.

Bids are being taken by W. Stevens, city clerk, Richmond, Ind., for the new one-story municipal electric power plant, 75 x 85 ft., estimated to cost about \$175,000. J. D. Lyon, Union Central Building, Cincinnati, is engineer.

The Oakes Co., Indianapolis, manufacturer of automobile fans and pressed steel parts, has increased its capital stock from \$450,000 to \$700,000.

The Gulf States

BIRMINGHAM, Dec. 13.

The Continental Gin Co., 3330 Tenth Avenue, Birmingham, Ala., manufacturer of cotton ginning machinery, has awarded contract to the H. K. Ferguson Co., 6523 Euclid Avenue, Cleveland, for a machine shop, 100 x 300 ft., and foundry, 130 x 400 ft., estimated to cost in excess of \$350,000 with machinery.

Fire, Dec. 7, destroyed a portion of the repair shops of the Southern Pacific Railroad Co., Houston, Tex., including air brake works, metal shop and other structures with loss estimated in excess of \$50,000, exclusive of rolling stock. It is said that the plant will be rebuilt at once.

The Stockdale Oil Mill Co., Stockdale, Tex., is planning to rebuild the portion of its main works, destroyed by fire, Nov. 30, with loss estimated at about \$50,000.

The Sears Mfg. Co., Lockhart, Tex., has leased a local building and will install machinery for rubber-working operations, including the manufacture of specialties from re-claimed rubber goods. The equipment will include fabric stripping machines, cutting machines, power riveting machinery, etc. A former works of the company was recently destroyed by fire. J. M. Sears is manager.

Fire, Dec. 5, destroyed the mechanical engineering laboratory building at the grounds of the Agricultural & Mechanical College, College Station, Tex., with loss estimated at about \$75,000.

The Board of Directors, Alabama Home for Feeble-Minded, Tuscaloosa, Ala., has plans under way for the erection of an electric power plant, in connection with other buildings. C. B. Verner is chairman of the building committee.

The Canal Construction Co., Fort Pierce, Fla., is planning for the erection of machine shops for repair and parts replacement of machinery used in connection with drainage construction.

The Rock Products Co., Rock Junction, La., recently incorporated with a capital of \$100,000 is perfecting plans for the operation of a sandstone quarry in this section, and will install machinery for quarrying, reduction, etc. The company has secured a tract of 16,000 acres. L. S. Bourne is president, and R. P. Eldridge, secretary, both of Sugar Land, Tex.

The J. H. Miner Saw Co., Meridian, Miss., manufacturer of saws, etc., has filed notice of increase in capital to \$150,000.

The new plant of the Marine Iron Works, 1012 Magazine Street, New Orleans, La., will be two stories, instead of one story as previously announced, 75 x 115 ft., and equipped as a machine shop and forge works. It is estimated to cost \$75,000. A. J. Krall is vice-president.

The Mid-West Petroleum Co., Fort Worth, Tex., has acquired a local site and plans for the erection of a new refinery, with initial capacity of about 2000 bbl. per day.

The Southern Automobile Mfg. Co., Memphis, Tenn., is

contemplating the erection of a new plant in the vicinity of Tampa, Fla., for the manufacture of automobile trucks and parts.

A plant for the manufacture of gas ranges is being considered by Arnold G. Glass, Birmingham, Ala.

The Central South

St. Louis, Dec. 13.

The Chester Iron & Foundry Co., 7000 Vulcan Street, St. Louis, will take bids early in the coming year for a new one-story foundry, 50 x 100 ft., to cost about \$30,000.

The Clear Vision Pump Co., 110 East Douglas Avenue, Wichita, Kan., manufacturer of gasoline pumping machinery, has plans under way for new plant, 50 x 70 ft. Bids will be asked at an early date.

The Louisville & Nashville Railroad Co., Louisville, has perfected plans for new construction and repair shops at Baxter, Ky., to cost in excess of \$500,000. W. H. Courtenay is chief engineer.

The Atchison, Topeka & Santa Fe Railroad Co., Chicago, is arranging for the erection of a number of new coaling stations in Oklahoma, with mechanical handling and conveying equipment. F. M. Bisbee, Amarillo, Tex., chief engineer, is in charge.

The Missouri, Kansas & Texas Railroad Co., Railway Exchange Building, St. Louis, has awarded contract to H. C. McCoy, Cleburne, Tex., for its new shops at Oklahoma City, Okla., estimated to cost about \$200,000.

The Wagner Fuel Co., Escalante, Ky., is planning for the erection of a new tippie at its coal properties.

The Michaels Art Bronze Co., 230 Scott Street, Covington, Ky., will take bids at once for the erection of its four-story and basement addition estimated to cost about \$40,000.

The Owensboro Ditcher & Grader Co., Owensboro, Ky., manufacturer of road machinery, has acquired a building in the vicinity of its plant for an addition. It recently increased its capital to \$500,000 for expansion.

The Belknap Hardware & Mfg. Co., Louisville, will call for bids at an early date for the erection of its proposed addition, 190 x 190 ft., estimated to cost about \$400,000.

A. N. Lewis, Dover, Tenn., is organizing a new company to establish a plant at Clarksville, Tenn., for the manufacture of shuttles and other textile equipment.

The Southern Wood Products Co., 106 North Western Parkway, Louisville, has plans under way for a new plant to manufacture automobile bodies. L. Klarer, Jr., is secretary and treasurer.

The Louisville Electric Mfg. Co., 660 South Second Street, Louisville, has been incorporated with a capital of \$75,000 to manufacture electrical machinery and parts. Contract for a one-story building, 60 x 150 ft., was recently awarded to A. Markham & Co., Louisville. The company is headed by C. E. Willey and William Watts.

The Smith Mfg. Co., Pineville, Ky., has been organized by W. E. Smith and William Durham, to manufacture metal products, including sheet metal specialties.

The Kentucky Iron & Steel Co., N and Jones streets, Louisville, has preliminary plans under way for its new plant, estimated to cost in excess of \$200,000 with machinery.

The Berger Mfg. Co., Canton, Ohio, manufacturer of sheet metal building products, has awarded a contract to Fred H. Crites, 2136 Belleview Street, Kansas City, Mo., for a two-story works building at Fourteenth and Charlotte streets, North Kansas City, Mo., to cost in excess of \$150,000.

The Western Kentucky Oil & Refining Co., Franklin, Ky., has preliminary plans under way for the construction of a new oil refining plant.

The Standard Sanitary Mfg. Co., Louisville, has completed plans for an addition to its factory on West Main Street, to cost about \$22,000.

The Portis Mercantile Co., Lepanto, Ark., is planning to rebuild its cotton compress, recently destroyed by fire with loss estimated at about \$40,000.

The Harlan Electric & Machine Co., Harlan, Ky., has been authorized to change its name to the Cumberland Machine Works.

Canada

Toronto, Dec. 13.

While the demand for machine tools in this market is quiet, dealers are receiving some fair-sized lists and are apparently satisfied with the amount of business being done. The shortage of power throughout the Niagara peninsula has

had an undesirable effect on the electrical machinery market, but this is gradually improving and the demand is expected to pick up.

The adverse rate of exchange on the Canadian dollar in the United States is having some effect on sales of American machinery and tools in Canada. At present there is a difference of about 15 per cent, and when Canadians enter the American market for equipment they are usually under the necessity of making up this difference in money values in addition to paying the freight and duties. It is expected that the present high rate of exchange will increase the demand for Canadian and British machinery, as domestic users are inclined to buy from the manufacturers whose prices are the most favorable.

The MacFarlane Engineering, Ltd., Paris, Ont., will build an addition to its plant at a cost of \$40,000.

The Fulton Motors, Ltd., Farmingdale, Long Island, will establish a plant at Welland, Ont., and has obtained property of the Canadian Automatic Transportation Co., on the Ontario Road. The site consists of 4½ acres and additional buildings will be erected. The company proposes to turn out motor trucks of from ¾ to 5 tons capacity.

The American Ironing Machine Co., Chicago, has leased the plant of the Woodstock Worsted Knitting Co., Woodstock, Ont., with an option to buy, and will start March 1 to equip the building for the manufacture of the "Simplex" electric, gas and gasoline irons. H. G. Grosse is president and general manager and E. C. Peter, vice-president.

J. A. Morris, Dorchester, Ont., is in the market for an 18-in. ball-bearing Robinson grinder.

The plant and equipment of the Electro Foundries, Ltd., Orillia, Ont., were destroyed by fire Dec. 4 with a loss of between \$25,000 and \$40,000. The future plans of the company have not yet been determined.

The city of Listowel, Ont., has granted concessions to a company in which B. L. Banford is interested, and in return it will spend \$50,000 on new equipment and machinery and make improvements to its plant for the manufacture of steel, wire and wooden wheels.

The plant of the Grande Prairie Electric Co., Grande Prairie, Alta., will be taken over by the city on Jan. 1. An additional power unit consisting of a 70-hp. oil engine will be purchased in the spring, together with exciter, generator and transmission equipment.

California

Los Angeles, Dec. 7.

The Friesley Air Craft Corporation, Gridley, Cal., has arranged for the immediate erection of a new plant, for the manufacture of aeroplanes and parts, to be constructed on the unit plan.

The Heavy Fuel Appliance Co., Los Angeles, has been incorporated with a capital of \$100,000 by C. H. Coffey, H. W. B. Eldridge and R. H. Ross, Los Angeles, to manufacture oil-burning and other fuel equipment.

P. E. Wilhite & Son, Los Angeles, have filed notice of organization to operate a plant at 4607-09 Central Avenue, for the manufacture of sheet metal and other metal products. P. E. Wilhite heads the company.

The Crane Co., Chicago, manufacturer of pipe, valves, water and steam specialties, etc., is having plans prepared by Morgan, Walls & Morgan, 1124 Van Nuys Building, Los Angeles, architects, for a new two-story and basement building, 80 x 100 ft., on East Third Street.

The Petroleum Products Co., Martinez, Cal., has secured a 20-year lease on property at Oxol, between Martinez and Port Costa, as a site for a new refinery. Plans are being prepared and it is proposed to begin construction at an early date.

The Electric Sign Flasher Corporation, Los Angeles, has been incorporated with a capital of \$50,000 by Albert Andrews, G. T. Mahana and M. H. Mahana, Jr., Los Angeles, to manufacture electric flashing devices and other electrical apparatus.

H. Gumbel, Collingwood Street, San Francisco, has filed plans for a two-story machine shop and repair works on Collingwood Street.

The Federal Telegraph Co., Hobart Building, San Francisco, has plans under way for the erection of four new wireless plants to cost about \$500,000, with equipment. The stations will be in the vicinity of Palo Alto, San Diego and Los Angeles, Cal., and Portland, Ore.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

Iron and Soft Steel Bars and Shapes*

Bars:	Per Lb.
Refined iron, base price.....	4.70c.
Swedish bars, base price.....	20.00c.
Soft steel bars, base price.....	3.48c. to 3.70c.
Hoops, base price.....	4.18c. to 4.70c.
Bands, base price.....	4.18c. to 4.65c.
Beams and channels, angles and tees	
3 in. x 1/4 in. and larger, base.....	3.58c. to 3.80c.
Channels, angles and tees under 3 in. x	
1/4 in., base.....	3.48c. to 3.70c.

*The low prices are those of the Carnegie Steel Co. and are subject to a cartage charge of 15c. per 100 lb. in the Metropolitan district and 10c. per 100 lb. to local points in New Jersey.

Merchant Steel Per Lb.

Tire, 1 1/2 x 1/2 in. and larger.....	3.75c.
(Smooth finish, 1 to 2 1/2 x 1/4 in. and larger).....	4.25c.
Toe calk, 1/2 x 3/8 in. and larger.....	5.00c.
Cold-rolled strip (soft and quarter hard).....	10.35c. to 11c.
Open-hearth spring steel.....	6.50c. to 10.00c.
Shafting and Screw Stock:	
Rounds.....	5.50c.
Squares, flats and hex.....	6.00c.
Standard cast steel, base price.....	15.00c.
Best cast steel.....	20.00c. to 24.00c.
Extra best cast steel.....	25.00c. to 30.00c.

Tank Plates—Steel

1/4 in. and heavier.....	3.78c. to 4.00c.
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Sheets

Blue Annealed Per Lb.

No. 10.....	4.68c. to 5.20c.
No. 12.....	4.73c. to 5.25c.
No. 14.....	5.30c.
No. 16.....	5.40c.

Box Annealed—Black

	Soft Steel C.R., One Pass Per Lb.	Wood's Refined, Per Lb.
Nos. 18 to 20.....	6.30c.
Nos. 22 and 24.....	6.35c.	7.80c.
No. 26.....	6.40c.	7.90c.
No. 28.....	6.50c.	8.00c.
No. 30.....	6.75c.
No. 28, 36 in. wide, 10c. higher.		

Galvanized

Per Lb.

No. 14.....	7.00c.
No. 16.....	7.25c.
Nos. 18 and 20.....	7.40c.
Nos. 22 and 24.....	7.55c.
No. 26.....	7.70c.
No. 27.....	7.85c.
No. 28.....	8.00c.
No. 30.....	8.50c.
No. 28, 36 in. wide, 20c. higher.	

Welded Pipe

Standard Steel

	Blk.	Galv.		Blk.	Galv.
1/2 in. Butt....	—34	—17	3/4-1 1/2 in. Butt....	—3	+17
3/4-3 in. Butt....	—38	—22	2 in. Lap.....	+	3+21
3 1/2-6 in. Lap....	—33	—18	2 1/2-6 in. Lap....	+	1+17
7-12 in. Lap....	—23	—6	7-12 in. Lap....	+	12+30

Wrought Iron

Steel Wire

BASED PRICE* ON NO. 9 GAGE AND COARSER Per Lb.

Bright basic.....	6.00c.
Annealed soft.....	6.00c.
Galvanized annealed.....	6.75c.
Coppered basic.....	6.50c.
Tinned soft Bessemer.....	8.00c.

*Regular extras for lighter gages.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet.....	23 1/2c. to 24c.
High brass wire.....	24 1/4c. to 25c.
Brass rod.....	21 1/4c. to 24c.
Brass tube.....	39 1/4c. to 41c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 24 1/2c. to 25 1/2c. per lb. base.	
Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.	

Tin Plates

Bright Tin	Grade	Grade	Coke—14x20	Primes	Wasters
	"AAA"	"A"			
	Charcoal	Charcoal			
	14x20	14x20			
IC...	\$12.65	\$11.65	80 lb...	\$8.80	\$8.55
IX...	14.45	13.45	90 lb...	8.90	8.65
IXX...	16.25	15.05	100 lb...	9.00	8.75
IXXX...	17.85	16.65	IC...	9.25	9.00
IXXXX...	19.45	18.25	IX...	10.25	10.00
			IXX...	11.25	11.00
			IXXX...	12.25	12.00
			IXXXX...	13.25	13.00

Terne Plates

8-lb. Coating 14 x 20

100 lb.....	\$8.85
IC.....	9.00
IX.....	10.00
Fire door stock.....	12.00

Tin

Straits pig.....	39c.
Bar.....	44c. to 49c.

Copper

Lake ingot.....	16 1/2c.
Electrolytic.....	16 1/2c.
Casting.....	16 1/2c.

Spelter and Sheet Zinc

Western spelter.....	8 3/4c. to 9c.
Sheet zinc, No. 9 base, casks.....	14c. open 14 1/2c.

Lead and Solder*

American pig lead.....	7 1/2c. to 7 3/4c.
Bar lead.....	9c. to 10c.
Solder, 1/2 and 1/2 guaranteed.....	29c.
No. 1 solder.....	26 1/2c.
Refined solder.....	22 1/2c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	80c.
Commercial grade, per lb.....	40c.

Antimony

Asiatic.....	7 1/2c. to 8 1/2c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....	35c to 38c.
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Old Metals

Business has been hard to put through during the past week as the market was sluggish with prices slightly lower. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	11.00
Copper, heavy and wire.....	10.00
Copper, light and bottoms.....	8.25
Brass, heavy.....	6.75
Brass, light.....	4.75
Heavy machine composition.....	10.50
No. 1 yellow brass turnings.....	6.00
No. 1 red brass or composition turnings.....	8.25
Lead, heavy.....	3.50
Lead, tea.....	3.00
Zinc.....	3.50

